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ABSTRACT

The following articles and reports are presented in this publication of "Overseas Universities:" "Appropriate Technology and University Education," by John Twidell; "The Training of Engineering Staff for Higher Education Institutions in Developing Countries," by D. W. Daniel, C. A. Leal, J. H. Maynes and T. Wilmore; "A Case Study of an Academic Link--the Birkbeck-Bangalore Phosphazene Project," by Robert A. Shaw and Michael Woods; "The Rationale for the Use of External Examiners in the Conduct of University Examinations: The Case of the University of Ibadan," by Michael Osolewa; "Is Traditional Medical Education Suitable for Developing Countries?" by Frank Howarth; "The Development of New Universities Sussex Seminar on Management Information for Planning," by G. Lockwood; "The Sussex Seminar on Administrative and Governmental Systems in Growing Universities," by M. L. Shattock; "Review--Asavia Wandira, 'The African University in Development,'" by J. H. Sislian; "Courses in the U.K.--Theatre Studies at Cardiff," by John Linstrum; "A.U.C.C. to Administer C.I.D.A. Programmes" and "Inauguration of the University of Juba." (SW)

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Editorial

A theme running even more strongly through the articles in this issue than in our last is "relationships". This may be the relationship of a course or curriculum to its local environment and society — to its cultural matrix and economic conformation; or to such factors as the point of optimum maturational development of a student or to the psychology of the learning process or to other parts of the same course or curriculum; or the association may be a project linking two centres of learning and research. Relationships may also be extensive or intensive, and entail a certain scale — of size or value. And our authors naturally promote or support sets of options within their chosen parameters in order to extend or reorientate the form of relation. Needless to say, the I.U.C. itself is a prime catalyst of relationships.

The developmental context, and particularly the notion of quantitative scale, are the guidelines of what John Twidell calls "Appropriate Technology" — a version of Schumacher's "Intermediate Technology" and its campaign cry of "small is beautiful". Ironically — though such ironies are common — here we have a concept first advertised within Euro-American culture for negative reasons — that is, in protest against physical megalopolis, supranational industry and monolithic politics — all sorts of Brobdinagianism — now taken up in the third world positively, because of its natural harmony with local ways and the size of local budgets, in order to provide a key to unlock technical progress in areas traditionally organized for simple and small-scale family and village land cultivation. Of course, it could be argued that Appropriate Technology, a humanly-scaled approach, must ultimately become as large-scale, abstractly uniform and reflexly conditioned from centrally controlled stimuli as other technologies, the only difference being in the range of the community affected. However, in the dialectic of development (using "dialectic" neutrally, to mean, for example, a flow path with sequential multi-inputs) Appropriate Technology, an "antithesis" in industrially sophisticated countries, would seem in countries hitherto reliant on small-scale agriculture and unable to afford expensive hardware a necessary stage of "thesis" with longterm prospects for extension, particularly as — and Dr. Twidell draws attention to it — it takes 15 years after graduating for University students in developing countries to reach their peak and therefore unavoidably both to undergo and engineer a changing world. It is not surprising that Dave Daniel and his colleagues, urging an appropriate educational policy for engineering training where resources are limited, should complement the curricular ideas of Dr. Twidell on physics; to both, also, function — the active and practical causative relationship between agent and agenda — is paramount.

The N.E.L.P. team also refer to the usefulness of links. One such link is the twinning of Birkbeck and Bangalore — not for teaching, directly, but so as to pursue shared, mutually fruitful research goals through exploiting each party's special strengths and facilities; such a connection is altogether dependent on reciprocal personal relationships. Robert Shaw and Michael Woods' prescription for collaboration at a distance, indeed, might well be entertained for adoption by those aiming to enhance multi- or inter-disciplinary co-operation within an institution or faculty. As a means of co-operation the link method would also seem to fit into the "Strategy for 1978: Aid and Co-operation in Higher Education and Research" (the title of a recent I.U.C. paper submitted to relevant U.K. Government departments): it naturally lends itself to bilateral funding and to fulfilling the now rejoined aims of aid and co-operation: it can also be more closely controlled financially and directed at specific and selective goals. It is certainly this model of relationship which Frank Howarth urges medical educators to adopt. His mind has, no doubt, been powerfully concentrated on the basic issues by his experience of training doctors in a community where life and death are both naked of masks. But in this field, too, the feedback into British concepts of medical education comes appropriately at a time when the United Kingdom's institutional defences against sickness are themselves commonly acknowledged to be at risk. To advance the holistic approach, Professor Howarth says the technology is available . . . it is the formula which is awaited: to resynthesise components which, he argues, the dividers and rulers of the medical tradition have put asunder under the banner of the Gradgrind lobby, powerfully entrenched in all forms of education. Perhaps then there might be more chance of avoiding the judgment that a student "did not fully understand the techniques he was attempting to employ, and hence was making numerous unwar-

ranted deductions . . ." (from an examiner's report, quoted by Michael Omolewa). In geography such a failure might get us lost; in medicine it might make us dead.

If external examiners can so intuit one student's error through such an archetypal statement of educational failure, one would think that their role — as distinct from where they came from — might be universally uncontroversial; not so at Ibadan, reports Mr. Omolewa, though perhaps the important point here is his observation that the "external examiner system is part of the tradition of European and some American Universities designed to encourage contact among Universities to . . . exchange ideas": it might be accepted that the external examining role is useful and valid in exact proportion to the scale, depth and parity of the associated "exchange" function.

Finally we publish two papers given at the 1977 Sussex Seminar on Planning New Universities: these follow up previous articles on administration. One or two sentences stand out:. . . "there is no single 'right' way to do anything in a University"; "Planning is not necessarily concerned with the formulation of plans"; and "Planning is no more than people making judgments . . .". One wonders, nevertheless, if they ever make them in Universities on the relational scale asserted in the instruction of the Chinese painter, Weng Wei (quoted by an eminent speaker at the 1977 Convocation of the University of Singapore): "When painting landscapes, use more your instinct than your touch. Allow ten feet for mountains, a foot for trees, an inch for houses, and a tenth of an inch for men".

R.G. Harris

A Note on Contributors

Dr. John Twidell, of the Department of Applied Physics, University of Strathclyde, has been on secondment to the University of the South Pacific, Suva, Fiji.

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Professor Robert Shaw, Department of Chemistry, Birkbeck College, London, is joint Director of the Birkbeck-Bangalore Phosphazene project and a member of the Academic Policy Committee of the I.U.C.; **Dr. Michael Woods**, Research Associate in the same Department at Birkbeck, is joint-deputy team leader of the project.

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The views expressed in these contributions are those of the authors and do not necessarily represent those of the Inter-University Council.

Appropriate Technology and University Education

John Twidell

INTRODUCTION

Universities must educate for the future. However we have no guarantee that the future will be a continuous extrapolation of the past, and so we always need to reconsider policy and reconfirm our goals. This article describes the background planning and initial operation of some degree courses at the University of the South Pacific. Here certain scenarios and constraints operating at a world level are clarified, and to some extent simplified, by the island nature of the small scattered countries supporting the University. I believe that this model operation has much to offer other more complex situations in both the developed and developing world.

The courses were in Physics within an interdisciplinary science training and are associated with ideas current in Appropriate Technology. However, much of the background justification for the decisions taken is relevant to other branches of science and technology, and has definite implications for training in the social and economic sciences, and in the preparation of science teachers. I will first discuss the problem from a general viewpoint, before describing the more particular aspects of our curriculum. We need to (1) enumerate the physical contraints operating on our societies during the future employment of today's undergraduates, (2) discuss the role of these people as graduates in their societies, (3) outline the academic aims of our teaching, (4) discuss the technologies that are appropriate for our situation, and (5) give examples of specific courses developed at the University of the South Pacific.

FUTURE CONSTRAINTS ON SOCIETY

University students begin to exercise considerable responsibility in their societies about 15 years after graduating in developing countries, and after about 25 years in developed countries. Looking ahead to that time, we may expect the following effects to be apparent:-

(a) Human population numbers will have greatly increased. In addition there may be a drift to urbanisation.

(b) Information communication exchange will have developed considerably. Electromagnetic systems based on solid state electronics will be accessible to the great majority of the world's populations. The transport of goods however will remain a difficulty.

(c) Fossil fuel energy supplies will be severely depleted, especially to those countries dependent on imported fuel. Nuclear energy supplies will not be satisfactory in developing countries for economic, technical and environmental reasons. In islands communities nuclear supplies are certainly not attractive, and therefore the development of alternative energy supplies will be paramount.

(d) Many finite material resources will have been depleted, so there will be a bias to organic products from renewable supplies and to the use of low grade local materials.

(e) Rural communities will have to be strengthened and developed to maintain food production and traditional social structures. Local supplies of energy and material will be beneficial, and advanced communication systems will encourage national interaction and decrease rural isolation.

(f) A result of these constraints will be to produce resource-limited societies operating in contrast to the resource-rich societies of the present developed world. Today's resource-limited (developing) societies will be prepared for the future if they do not hasten to follow the past trends of the resource-rich (developed) technologies. Today's developed societies will be in extreme difficulty if they do not rapidly learn to live more harmoniously with their environment in the manner of many of today's seemingly less developed countries. Thus technology will move away from a resource-rich base, to methods constrained by resource limitations. Such a move need not be associated with a lowering of the quality of life, and may, hopefully, be taken as an opportunity to improve conditions and aspirations for many of the world's poor.

THE ROLE OF GRADUATES

All countries now provide University education for selected pupils. Selection is aimed for those of top academic ability to be trained as leaders and "professionals". The Universities to which pupils go will usually exist within their own country or group of countries, but may also be "abroad" or "overseas" in developed situations. The public

expects such facilities to exist for its young, even if it also realises that the pupils may never return to the particular environment from which they were raised. We may assume that society favours this form of education, since the practice of tertiary University education for top pupils is found throughout the world.

Universities therefore handle a very high quality human resource. The main function of a University is to develop this resource into a form that can be of service to the public. Thus University students should be given preferential treatment; not to favour selfish individual aspirations, but to favour their helpful co-operation in a wider society. From those to whom much has been given will much be expected.

What, however, do we expect? I would list the following characteristics to exemplify the ideal graduate: (a) maturity gained from accomplishments in specified fields of endeavour and from living in a responsible society at University, (b) the ability to lead and make decisions in creative situations, (c) knowledge within certain academic areas, (d) specific skills, including associated manual skills, (e) ability and motivation to apply knowledge and skills in a local situation to the benefit of the society supporting the education.

ACADEMIC AIMS

I start with the premiss that we must plan to satisfy the needs and aspirations of the societies from which our pupils are drawn and sustained. We must expect our graduates to be employed in their own countries or regions, and not emigrate or move to widely separate situations. Unfortunately the aims of University education in developing countries are rarely clear, and are all too often bent on satisfying standards appropriate to Western developed countries without thought to the local situation. It is therefore not surprising that many graduates emigrate towards the Western developed countries by whose criteria they have been educated, and of those that remain too many strive to introduce methods appropriate only to the resource-rich developed world. This state of affairs has never been satisfactory, and now with the realisation of the changing future constraints on development it is even more important that academic aims be clearly appropriate to the local situation.

Our problem was to put all this theory into practice with regard to Physics at the University of the South Pacific. The University has no engineering disciplines as such, and emphasises interdisciplinary teaching in the basic sciences. Much of our thinking was in line with current attitudes in Appropriate-Technology and environmental science, and so we were led to consider the integration of these developments with our academic curriculum.

APPROPRIATE-TECHNOLOGY

Appropriate-Technology is becoming accepted as a phrase to describe a new branch of applied science committed to consider the social and economic implications of technological devices and enterprises. Of particular concern is the impact of technologies on developing countries. It is clear that the sophisticated machine-intensive technologies of the developed world are, *in toto*, providing little benefit to the majority of the world's population. This is especially apparent when the resource-rich methods of large scale technologies are transferred to resource-limited situations. The problem becomes even more acute when the future of limited, and therefore expensive, fossil fuels is contemplated.

A technology is considered Appropriate-Technology if it satisfies most of the following conditions [3] :-

(a) It should be relevant to the development of the local community in an obvious way. The output of the technological practice should be fed back to improve the material well-being of the local community.

(b) The worth of the technology must not be assessed solely on financial criteria. Cultural, religous, social and environmental criteria must be included.

(c) People matter more than things. Thus the technology may have a strong bias to being labour intensive. Employees should have a sense of individual satisfaction, participation, and creativity in their work.

(d) People will expect an improvement in their way of living as a result of applying the technology. Any net income resulting from the technology is expected to be distributed evenly, and not lead to increased inequality in the distribution of income and wealth.

(e) The technological practice should use skills obtained from the local community. The use of established and traditional skills is to be encouraged so as not to disrupt local society.

(f) The technology must interface with the local environment, using energy and material flows in a non-destructive manner.

(g) The technology should be established with an amount of capital within the scale of the local community.

(h) The technology should be "economic" in the

full sense of that word. Clearly it is important to fully respect accepted methods relating to mechanical efficiency, robust and safe design, ease of maintenance, marketability of products, accurate accounting, sound management, etc.

In defining Appropriate-Technology in this way, it is most important that the methods are seen as a step forward in the progress of technology generally. Knowledge gained in established technology must be applied to produce efficient and useful machines and systems. However in Appropriate-Technology the effects of the technology are judged by a far wider set of standards than established technology.

Developmental Appropriate-Technology has been largely encouraged and introduced at village level with people of little educational background. Schumacher[1] used the name Intermediate-Technology for these developmental aspects and in particular emphasised the economic policies of low capital investment and local involvement. An associated movement has encouraged the introduction of small scale, often home built, technological devices in the developed world. With the enthusiasm that these movements have generated, an impression has been given that Appropriate-Technology is easy. It is not. There is a vast range of research and development problems that have to be overcome in scientific, technical, economic and social aspects before any particular device or system becomes operational. If one believes, as I do, that Appropriate-Technology is to be encouraged, it is clearly most important that Universities become involved. This involvement must be at both research and teaching level, so that the expertise, resources and talents of University personnel can be used positively. Nowhere is this more important than in the Universities of the developing world, where motivation and application are close at hand, and local talents can be channelled into relevant employment.

U.S.P. PHYSICS SYLLABUS

U.S.P.

The University of the South Pacific serves 11 island countries of the South Pacific Region — Solomon Islands, Fiji, the Gilbert Islands, Tuvalu, the New Hebrides, the Cook Islands, Nauru, Niue, the Tokelau Islands, Western Samoa and Tonga.

The total population of these countries is 1.2 million dispersed over a land area of 68,000 km^2 and a sea area of 40×10^6 km^2. The countries themselves are predominantly island groups, for instance in Fiji there are over 100 populated islands. The main campus is at Suva, Fiji. There is a second campus at Samoa for Agricultural Studies, and there are regional Extension Service Centres in 6 of the countries other than Fiji.

It is contendable that by its geographical nature the traditional communities of the Region can only continue by an acceptance of Appropriate-Technology. For instance, it is clear that large central power supplies cannot service island groups by conventional electrical grid systems, nor can commuter populations serve urban developments by marine transportation.

The University now has a degree structure that requires students to establish 2 major subject interests for their degree. In 1977, for the first time, Physics could be studied as a major interest. This could be paired with Mathematics, Biology or Chemistry. There is no Engineering or Medicine in the University at degree level. How did we, as a group of Physics staff, plan the syllabus and establish the courses?

The syllabus

The syllabus is where the needs of the technology and the students meet. This is outlined in fig. 1 below. Feedback gained from the experience of running courses and placing students in employment is essential, and is indicated on the diagram.

Note that at no stage does the education necessarily relate to foreign standards. Clearly contact with "overseas" Universities will be useful and beneficial, but this should never be allowed to hoodwink the needs of the local situation. Student involvement should certainly include practical work in realistic situations, and so in our case all students had courses in mechanical and electrical workshop training as well as experimental work leading to open-ended projects.

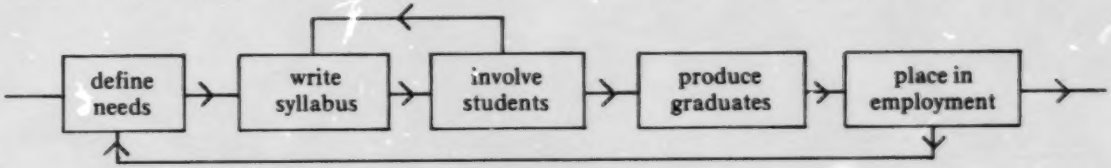

fig. 1: *Planning an educational structure*

Graduate employment

Following our principles, we first established the needs of the people of the Region with regard to Physics. Here the geographical nature of the individual countries and the Region predominated in the thinking. The Region is composed of very dispersed island groups having relatively small populations linked closely to the rural and marine environment.

The only man-power requirement survey available was produced by a U.N. team in 1973[2]. This is considered to have been proved very moderate in expectation, and, in any case, is quickly becoming of historical interest from our point of view. So we were left with having to trust to our own judgment on man-power requirements after consultation with as many individuals and organisations as possible.

We finally identified the following requirements of the Region with regard to University graduates trained in Physics (many of these requirements could also be met after training in other academic disciplines):-

(a) The greatest need is for mature individuals, with qualities of numeracy and technical ability, to be spread amongst the populations of the Region. These graduates would have to influence society in a sensible manner with regard to choices and implementation of future technical developments, and would have to confidently occupy positions of responsibility in the community.

(b) Amongst the graduates, about 40% would be expected to become Senior Secondary School teachers.

(c) The Region can clearly expect major problems with regard to material and energy supplies, and the maintenance of rural and island communities.

(d) For the Region to exist as an entity, or even as groupings of entities, communications would remain a predominant challenge.

(e) Agricultural, marine, geological, medical and light engineering developments and practices would remain the most important associations for Physics. Within these subjects, instrumentation, data handling and analysis would be important.

(f) Certain government related scientific posts, for instance in meteorological and marine services, would be available for restricted numbers of graduates.

Having considered the needs of the Region, we then had to build an educational course structure.

We identified two directions for this structure in Physics, both being relevant and appropriate to the needs of the people. One direction is seen as a horizontal interaction, emphasizing the local situation and background, independent of outside standards or educational traditions. The other direction is seen as a vertical interaction, linking the needs of the Region with the outside world of high technology and established educational criteria.

The horizontal direction to the courses takes as predominant subject matter, energy and materials supplies, and application in appropriate technology and agriculture. These applications include equipment and machines for small scale use. Students are encouraged to think locally and to work practically with materials purchased from local suppliers. Practical projects, for example, using timber and ferrocement and building renewable energy supply devices are most excellent examples of such "horizontal" application. The academic background to such work relies heavily on classical Physics.

The vertical direction of the courses considers telecommunication, solid state electronic devices, and instrumentation. We contend that although these subjects seem erudite and sophisticated, their application will be part of the life of the mass of the population of the Region in the future. In this sense then, the vertically directed subjects are aspects of technology appropriate to our situation. From an educational point of view, the analytical and structural link with mathematics through electricity and electromagnetic theory is of immense value.

The courses in Physics over the 4 years of the degree are portrayed in fig. 2.

Clearly this is not the place to go into detail concerning the individual syllabi for each course. It is better to give some examples of the work the students in Physics at U.S.P. have done in studies related to appropriate-technology. Other examples could have been given, and the possibilities of extending this type of work into other disciplines are legion.

Examples of students' work in Appropriate-Technology

In our experience the major porportion of a syllabus emphasizing Appropriate-Technology may appear very conservative. Whatever the application, there is a large core of basic well established science that must be understood and tested. It is in the application to appropriate examples that the

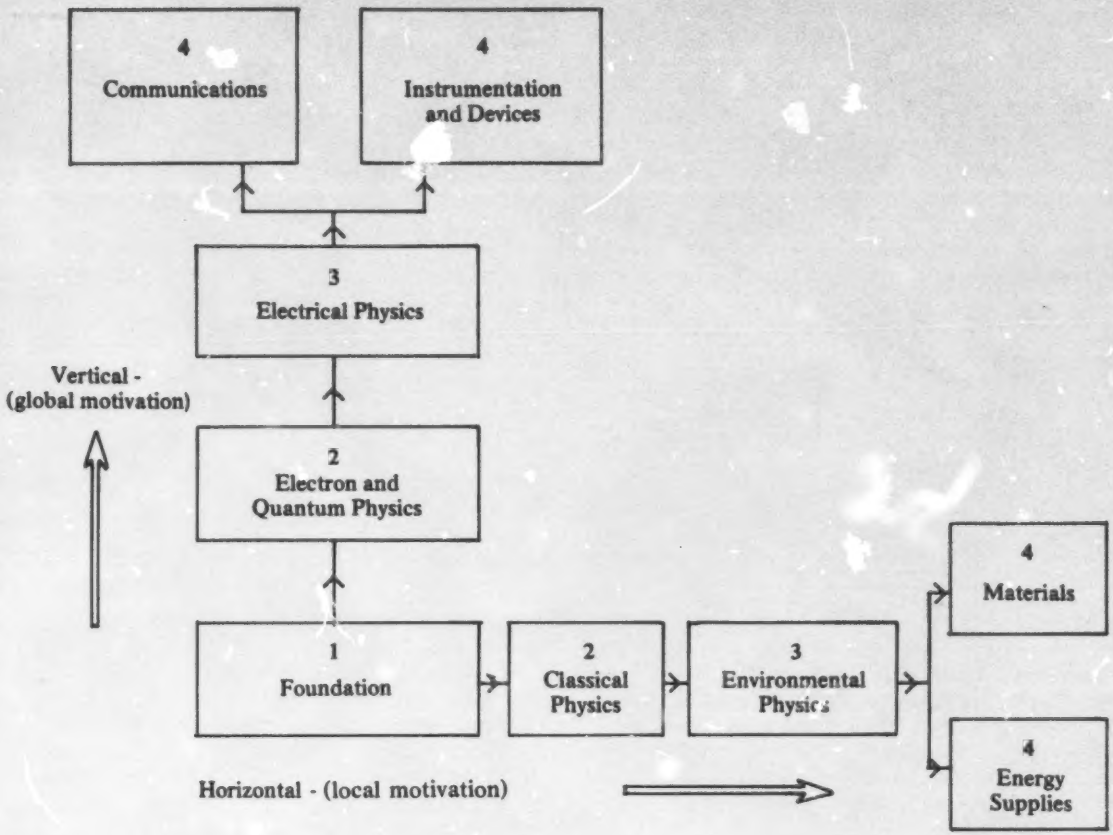

Fig. 2: *Course Structure (labelled by number of the year of study)*

syllabus will differ however, and thereby produce a motivation that is quite distinct. Four examples are now given of work that involved Physics students at U.S.P. in applications of intermediate technology appropriate to our situation. Each example has application in the Region, yet each presents an academic challenge.

Example 1 — Solar Water Heater

Our aim was to build a cheap household solar water heater using locally obtainable materials, to be assembled in an elementary workshop. The eventual design is sketched in fig. 3. The solar collector is a set of glass tubes filled with water, blackened with dilute clothing dye. Each tube is connected independently in a closed loop, with part of this loop running through a heat exchanger within a storage tank.

Old fluorescent lights, obtained at no cost, were used for the glass tubes. The ends were opened (cut the metal tip and push in the ends), and the fluorescent powder carefully washed out (care — the powder is poisonous). The storage tank was a used 44 gallon oil drum costing $2. The heat exchanger was a set of boiler tubes brazed across the diameter of the drum. The glass and heat exchanger tubes were connected together by 4.8 cm diameter PVC waste pipe. The frame of the collector and supports for the tank were made of wood. Insulation could be dried coconut fibre, wood shaving, or waste packing material. The collector was covered by glazing in a wood frame.

The performance of the prototype solar heater was encouraging and will be reported elsewhere. However the points to notice in the context of this paper are:-

(a) The work involved undergraduate students in

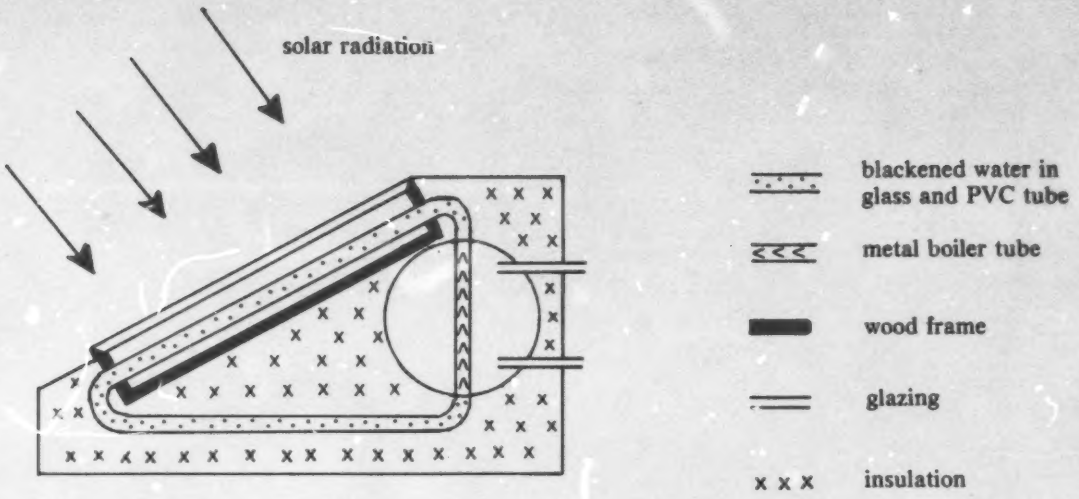

fig. 3: *Glass tube solar water heater*

a novel design. As a result, motivation by students and staff was high.

(b) Materials were used throughout that could be obtained from local builders merchants or other local sources.

(c) The constructional techniques provided a challenge, but could be performed with elementary equipment and hand tools.

(d) The design and theoretical analysis provide very difficult tasks in classical Physics. The hydrodynamics and thermal analysis are surprisingly sophisticated even on such a simple device. The measurement of the associated variables over an extended time demands planning and skill, (e.g. temperatures at critical positions absorbed solar radiation, convective water flow velocities).

Example 2 — Solar Water Still

Once again the aim was to produce a device using local materials according to a possibly improved design. The still is sketched in fig. 4. The novel design feature is the inclusion of a metal "separate condenser" for the condensation of freshwater from the vapour. The frame of the still was made of ferrocement — a technique easily mastered by the students. Glass, galvanised metal sheet, and rubber tubing were obtained from local suppliers.

The analysis of the heat and water pathways through the still is very complex, yet the principles are fundamental to Physics. As with the solar water heater, so too with the still, the students were introduced to a theoretical analysis involving careful measurement over an extended time.

Example 3 — Electric power from solar cells

The Marine Department of Fiji is experimenting with remote lights operated from batteries charged by solar photovoltaic panels. Our students were asked to test and analyse the performance of the panels. This project involved the students in elementary circuit design and the recording of electrical variables. In addition they had to measure and record solar and environmental data. As a further application, they could relate their study to possible rural electrification schemes. Costing was part of the project, so the realities of the possible applications could be judged. A theoretical understanding of the optoelectronic processes was expected, and a practical investigation of the fundamental processes could be made with equipment available in the University.

Example 4 — Satellite Communications

The Extension Services of the University communicate with their regional centres *via* a radio satellite link. The students are to be involved in setting up a model terminal. They will make the aerials from locally obtainable materials. The electronic equipment is similar to that used in local taxis. They will be involved in developing elementary facsimile transmission and reception. Eventually they would be asked to construct receive-only terminals that could be used by extension students in their homes away from the main centres.

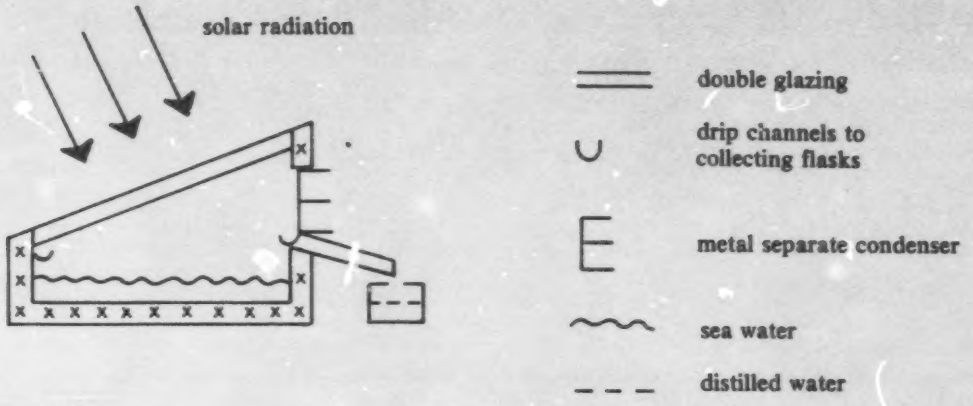

fig. 4: *Solar sea water still*

The challenge of the involvement of Physics students in this work is obvious. The work relates to the essential needs of the University Extension Services, and to the development and maintenance of future communication links in the Region that must be made available in both urban and rural situations.

Summary of examples

These examples of University degree work involving devices in Appropriate-Technology are just a few of the very many possibilities that present themselves. Other projects, for instance, have involved wind and water devices, biogas, and materials and structural problems. We have found that the general public is immediately appreciative of the efforts being made. The work has been described in local newspapers, a film has been made by the Government Film Unit, a radio programme has been recorded and schools have shown great interest. A recent ESCAP Workshop in Renewable Energy Supplies [4], hosted by the University's Institute of Natural Resources, has made use of the student project work as practical demonstrations to participants.

CONCLUSION

The aim of this paper has been to point out the need for Appropriate-Technology to be included in University education. This is particularly so in the Universities of developing countries. My contention is that the problems presented by resource-limited situations will only be overcome if people are educated towards their solution. University graduates are no exception, and it can be argued that national solutions to future technological problems can only be found if the leaders of society are properly trained in relevant studies. The practical and theoretical methods associated with Appropriate or Intermediate Technology are most certainly relevant in developing countries, and must appear in educational syllabi. To some extent we are able to do this in Physics at the University of the South Pacific, and I must express my gratitude to my colleagues who have made this possible.

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Mr. Peter Johnstone, Central Planning Office, Suva, Fiji.

Notes and References

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The Training of Engineering Staff for Higher Education Institutions in Developing Countries

D.W. Daniel, C.A. Leal, J.H. Maynes and T. Wilmote

The education and training of a sufficient number of competent engineers and technicians is a problem currently being faced by many countries, both those generally regarded as highly developed as well as those in the earlier stages of development. Although the problem is therefore a common one, the solution is not necessarily common, for if it is assumed that engineering education must be provided to produce people having the necessary knowledge, skills and attitudes to contribute towards a country's further progress, priority must be given to educational "relevance" as a criterion for decision making.

This article is specifically devoted to the education and training of engineering staff, both teaching and technician, needed to establish and operate higher education institutions in developing countries. Such training must itself be relevant on three counts. It must be relevant to the ultimate needs of the country in that such staff are concerned with the education of students with the potential to meet these needs. It must be concerned with the needs of the higher education institution so that the individual can contribute to the effective development and operation of the organisation. It must be concerned with the needs of the individual, his personal interests, aspirations and career ambitions.

THE STUDENT POPULATION

It is reasonable to assume that the numbers and areas of study of students in a higher education institution will reflect the immediate and long term needs of the country, if these are identifiable. Manpower forecasts have often been grossly inaccurate in the U.K. even based on detailed resources such as population statistics, and must inevitably be less reliable in some developing countries when the registration of births is not established in two thirds of the world. However, it can be rightly assumed that each country will have its own specific needs dependent on its geographical location, history (often significant in ex-colonies), economic state, social structure, ambitions, and natural resources. It can also be generally assumed that there will be a general shortage of trained manpower to undertake most immediate and necessary functions. The most important needs to identify are not, therefore, concerned with how many electrical or electronic or civil engineers may be required in five years time, but with what types of engineer may be required within these broad disciplines. The following examples may sound extreme, but the pressures of international educational conformity, the need to gain academic respectability, and the lack of expensive physical resources, have led to cases where electrical engineering students have specialised only in electronics when the need was for power distribution, and where building students have gained expertise in typical U.K. building techniques when the country's main construction material is timber.

Often the resources for a developing country are limited in terms of technological hardware, engineering materials, production methods and energy; but these are increasing and have increased at an exponential rate over the last few years. Modern equipment has, or is being installed (often by foreign aid) such as water pumping and purification apparatus, earth moving plant, agricultural machinery, mechanical transport of all types, electrical power, telecommunications systems etc., but preventive maintenance is often superficial or non-existent and there is a general shortage of expertise for repair and running maintenance.

Professional engineers, educated to degree or post-graduate level are, of course, needed as planners, project managers, technical administrators and some for research and development. However, the greater and often neglected need in most developing countries at the present time is for educated and trained technicians who have the knowledge and expertise to repair and maintain machinery and equipment, who are able to supervise skilled and unskilled labour by example, and who have the confidence to tackle problems, often for the first time, in the workshop or field.

In the U.K. it has been estimated that fifteen technicians are required for each professional engineer, where "technician" includes foremen, supervisors, draftsmen, progress chasers, technical store keepers, technical costers, etc. This ratio is not being attained in many developing countries from which a large number of students are studying overseas for degree or post graduate qualifications, often solely in an academic environment and without industrial experience or training. On returning to their own country such engineers, although highly qualified, do not have the experience, confidence or attitudes to take a leading role as practising engineers, and tend either to take a "desk job" or perpetuate the system in a University. For the cost and time taken to educate these students, possibly three or four technicians could have been educated and trained.

Although the above discussion has centred on identifying the needs for the immediate future, we must also recognise that engineering and associated technologies are rapidly developing, and are likely to develop faster in the countries with ground to make up. Engineering education must therefore produce the people who can adapt to changing technology, who have learned to learn without formal instruction, and who can evaluate the effect of new technologies through political, social and moral awareness.

It has already been indicated that higher education institutions in developing countries have two problems that are not experienced by their counterparts in more technologically advanced countries. These are:

To keep a balance in the education and training they provide for their students between being able to utilise the techniques, equipment and materials locally available to them; and being able to understand the possibly more sophisticated methods normally applied elsewhere, so as not to be disadvantaged when new technologies become available or if the opportunity for further education and training overseas arises.

To be able to train others to utilise, maintain and repair equipment within their own resources without the backup of specialist advice, servicing and supply of spare parts that may be readily available in more advanced countries.

Ideally persons chosen for training as engineering staff in any higher education institute should be those who have had considerable industrial or professional experience, but in most developing countries recruitment will usually have to be from newly qualified graduates or diplomates, and additional practical training will have to be provided to enable them to fill positions as teachers, demonstrators or technicians in the educational institution. As it is also almost inevitable that the rate of turnover of technologically trained staff in developing countries (in industry as well as education) will be high, a continuous programme of training needs to be established. It is important, however, to ensure that training programmes attempt to do more than merely improve technical competence.

In order to identify the general skills and attitudes required of engineering staff, it is perhaps helpful to review the historical development of higher education in many developing countries. Particularly in the ex-colonies, higher education has been based on the models that have been well established in other countries such as the U.K. Indeed, many of the courses originally designed specifically for the U.K., such as the External London B.Sc. and a variety of City and Guilds courses, were adopted on an external basis. Under the circumstances, the function of staff was only to teach within a prescribed programme and to meet the requirements of an externally set examination. Staff could be recruited on the criteria of having the academic qualifications and background to enable them to teach a set syllabus with considerable personal autonomy.

Gradually such ties with the educational system of more advanced countries are being and have been broken. Institutions have had to design their own courses, but this has been mainly in terms of the detailed academic content within the established framework and based on established models. This historical sequence, together with the desire of developing countries to build institutions that are "academically respectable", has preserved an emphasis on the recruitment of staff by virtue of their academic attainment, qualifications, and research experience. These are often of limited relevance to the job function. The building of a strong staff core to establish the needed educational provision is further confounded by adopting promotion and management criteria that have been identified for institutions in other countries having different objectives and in different stages of advancement.

As the ties to educational provisions in other countries are severed, staff are needed who, as well as having a basic technical competence, can operate professionally in the field of engineering

education. The aim must not be to bring together a number of individual academics, but to build up a team of *executives*. Executive is not used here to indicate senior managerial status, but people who can *do* and *initiate* rather than merely *know* and *apply*.

The prime requirements are for teachers who can identify the needs of the country, industry and individuals; who can evaluate those needs and decide educational priorities; who can design educational programmes that will help to meet those needs; and who can contribute positively and productively to establishing and managing institutions that can operate such programmes.

The types of qualities required by staff do not enable recruitment and selection to be made solely on the academic criterion of holding a B.Sc., M.Sc., or Ph.D; nor will study leave to gain such qualifications help them to develop these qualities. Experience of working in industry to acquire knowledge and skills or technological application, management, etc., experience of working in higher education within advanced and complex institutions, experience of having to make decisions and get things done are all more relevant to an individual who has already gained an adequate academic background.

It is essential that engineering education in developing countries obtains staff with these qualities (and many of the personal qualities are those needed by a practising engineer in industry), and modifications to recruitment and promotion policies may be necessary in order to do so. Only with staff capable of building an independent and relevant educational provision will the institution be able to discard the models inherited from other countries; models, incidentally, that are already being discarded as inadequate by many of the countries in which they originated.

In many ways the technician requirements are similar although more technically oriented. The need is for people who have experience of the repair and maintenance of equipment, people who have the initiative and confidence to tackle new problems, who can keep up to date with equipment availability overseas, who can appreciate an educational philosophy and, from an "idea", develop (with educational assistance) a working experiment.

STAFF RECRUITMENT, TRAINING AND PROMOTION

Staff employed and being recruited into institutions of higher education in developing countries will generally fall into one of three categories:-

Nationals being employed full time and having had relevant education and training either locally or overseas.

Nationals being employed part-time to teach on a one day, part day or short block basis.

Expatriates from either a developing or more advanced country.

For many reasons the ideal would be to establish a strong core of staff in any higher education institution from the first of these categories, but in countries where the demand for technical manpower exceeds supply, there is strong competition with industry and public employers for staff having the desired skills. Consequently the nationals that are employed full-time are often deficient in some of the full range of skills required, particularly those of educational development and management, and the practical skills to be able to provide supervision and internal training for the technician support staff. The external motivation to remedy these deficiencies is often small where promotion depends upon rigidly specified criteria of higher academic qualifications. The means to remedy them may also be limited where there are few institutions of higher and further education in the country, perhaps separated by considerable distances which hinder the potential interchange of ideas and experiences between staff.

Part-time staff employed also in industry and public services can contribute substantially in higher education and can use their intimate knowledge of the "local" technology to influence the curriculum, but their other work pressures can undermine their commitment to education so that their function must be peripheral to that of a full-time core.

The expatriate staff category certainly provides the means by which essential skills can be "bought in" as an interim measure, but suffers as a strategy from the need to buy a total package. An expatriate must bring to bear on the institution not only the skills and experience that are most needed, but also pre-conceptions, values, and attitudes that may relate little to the needs of the developing country.

With such complex and interrelated problems it is not possible to see a total solution, and therefore progress in the development of the institution can be made only in small steps designed to move nearer to the ultimate objective. Some of these steps may be:

The faculties/departments that are vital to the future development of the country, and

which are unable to attract suitably qualified staff, should be identified. A premium should be offered to the holders of a number of posts so that staff of the right calibre are attracted and retained. This may be unpopular and cause resentment in the other faculties, but is really little different from the current relationship between the educational institution and government departments and industry.

The filling of junior posts by enrolling freshly qualified local staff as assistants or instructors. After a probationary period these staff could be seconded as supernumeraries to educational institutions in other countries, where they should become involved in all aspects of course development such as curriculum design, teaching by objective, the integration of laboratory programmes, and integration of industrial training etc. Such secondments should be of at least one year's duration and could be certificated. It may be advantageous for some staff to attend two, or more such programmes at different institutions, possibly in different countries, during their careers.

The development of a link with a similar institution in another country. There could be advantages in the regular exchange of staff. There would be no nett reduction in staff numbers at either institution, while the expatriate and his college would also benefit from the widening of his experience. There may be difficulties in finding expatriates who can be spared, or are prepared to serve for a complete academic year overseas. Alternatively three, or possibly two, people could serve for one term each, with the seconded member from the developing institution providing some of the necessary liaison.

The recognition of a demonstrated ability in the development and operation of educational programmes as being the equivalent of a higher degree for promotion purposes.

An endeavour to get committed part-time assistance from staff of government departments and industry. Such assistance can compensate for the relative inexperience of the younger staff forming the core of the faculties.

The continued recruitment of a minimum number of expatriate staff but with a view to proven teaching, educational development and senior management skills rather than research. Indeed there would be much to recommend employing a skilled person in a senior position (say Dean of Faculty) for a period of three years, and at the same time appointing a national of clear potential as Dean Designate to work closely with the Dean during that period, to learn from him, and gradually to take over responsibility with advice and supervision.

The secondment of technicians/technologists to overseas institutions to increase their experience. The training offered should include the maintenance and repair of laboratory equipment and audio-visual equipment. This experience should not be limited to one faculty as technicians are often expected to display greater flexibility than academic staff.

A link with an institution in a more technologically advanced country to operate courses specific to the needs of staff in such institutions. As will be elaborated below, the provision of a suitable training programme in any U.K. higher education institution will be demanding, consequently to be both economically viable and of any real use to developing educational institutions such programmes must be mounted at a limited number of centres on a regular basis. Stability of the provision of such programmes is essential to enable both the U.K. institution mounting the programmes and the overseas institutions utilising the programmes to carry out realistic forward planning. This is of particular importance to the mounting institution since in the areas of maintenance and repair of equipment the services of visiting lecturers/demonstrators and co-operation with manufacturers will be necessary, and in the areas of practical use of equipment and techniques, periods of industrial replacement — probably with more than one organisation — will be required. Whilst the detailed needs of the three categories of engineering staff (teachers, demonstrators, technicians) are different, there is a considerable element of commonality, particularly in the field of maintenance and repair of equipment where there is a greater need for the teacher to have the expertise that one would not expect from his U.K. counterpart since there is a much higher probability of the teacher having to operate without technician support, the less developed the greater the sensitivity over relative status and hence the requirement that the teacher should know as much as his support staff.

Some of the objectives of a suitable programme for teachers of engineering in higher education institutions in developing countries should include that, on completion of the programme, the teacher should:

be able to apply his knowledge of theoretical concepts and analytical techniques to real problems in design, manufacture, operation, maintenance, research and development;

be able to conduct practical experiments to demonstrate or verify accepted theoretical concepts and to test hypotheses;

be able to carry out and interpret standard tests used in industry for the determination of design data or for quality or dimensional control;

be able to select equipment appropriate to subjects he expects to teach, keeping in mind relevance to the level of technology extant for local industry and the availablity of local resources for adjustment, maintenance or repair;

be able to operate, maintain and repair all equipment referred to above without recourse to the manufacturer or specialist servicing organisations.

CONCLUSION

In order for the Engineering Faculties or Departments within the institution to follow a planned development, it is necessary for them to establish, in consultation with industry, professional organisations and other relevant bodies, realistic policies, objectives, and priorities for the short and long terms. Fundamental issues such as the conflict beteen the desire to maintain academic and functional comparability with other institutions, and the desire to provide educational programmes relevant to the needs of the country's technical manpower, need to be resolved if criteria for deciding priorities, activities, and operational management structures are to be isolated.

It would, of course, be ideal if the institution could establish an educational provision, substantial research, consultancy and the opportunity to allow staff to improve their own education in areas of personal interest. But under the present circumstances most developing countries cannot afford to attempt such a total programme, and to do so would be to court failure in all aspects. Priorities must be decided that will enable the institution to meet the country's long term needs for technical manpower, that will establish a form of education producing engineers and technicians who "can do" rather than just "know" and who have the confidence and ability to build onto their basic skills and knowledge.

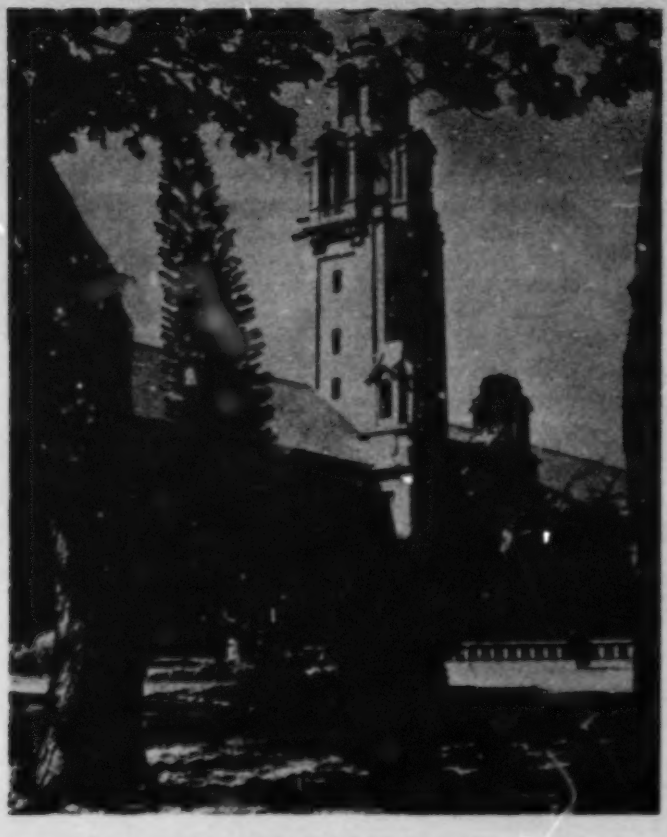
A Case Study of an Academic Link — the Birkbeck-Bangalore Phosphazene Project

Robert A. Shaw and **Michael Woods**

Collaboration between British Universities and similar institutions in the Third World[1] forms a long-term and specialised part of the assistance provided by the U.K. to developing countries. Although these collaborative ventures play a useful part in the training of experts and the development of pure and applied research work, they rarely attract the publicity that is given to the more grandiose aspects of the aid programme. In this article, we sketch the background to one of these academic links and the factors that we believe are important if they are to achieve their basic aims.

It has become increasingly apparent over the last decade or so that the complexity of current scientific research frequently outstrips the resources of one laboratory. For example, the comprehensive range of instrumental aids that are needed to solve many problems are not always available. Although it is possible to overcome these difficulties and to supplement the available resources by asking occasional favours of other laboratories, this approach does not always work out very satisfactorily, particularly if there is little or no benefit to the other people concerned. However, if their interest can be aroused successfully, usually by complementing the resources of the two laboratories in a fully integrated project, progress is often swift and collaboration can proceed smoothly.

Several collaborative programmes (usually with little official support) currently link the



The Administrative Building, Indian Institute of Science, Bangalore.

Dr. Michael Woods discussing results with Mr. (now Dr.) A. C. Sau and Mr. (now Dr.) M. N. Sudheendra Rao.

Department of Chemistry, Birkbeck College, University of London, with other laboratories. The most successful of these involve groups in Canada, France, Germany, The Netherlands, the U.K. and elsewhere; others have faded away after apparently making a promising start. Whereas every venture of this kind has its own particular aims and merits and consequently, in some ways, each one should be treated as a special case, nevertheless certain general guidelines can be drawn and these will emerge from a consideration of our most extensive collaboration, namely that with the Indian Institute of Science, Bangalore.

The joint research project between the Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bangalore, and the Department of Chemistry, Birkbeck College, London was formally established in 1971. The project combines a research study of the chemistry of phosphazenes, a group of phosphorus-nitrogen compounds, and the training of Indian post-graduate students. It is financed by the Overseas Development Ministry, U.K., and the University Grants Commission, India.

The training of young Indian scientists is an important feature of this joint project and is of particular concern to both funding bodies. India is seeking to build up a body of skilled scientists whose research work will contribute to the economic growth of the country. This link is designed to play a modest part in this process by giving Indian Ph.D. students a sound research training *in India*. It is now becoming increasingly clear that there can be several disadvantages in the advanced training given in European and North American Universities to graduates from the Third World. For example, prevailing conditions in these Universities are usually very different from those that await the new Ph.D. graduate on his return home. The dilemma posed by working under more challenging circumstances at home after training abroad almost inevitably leads to frustration and frequently results in stagnation or brain-drain. The developing country can ill-afford either of these calamities.

Phosphorus-nitrogen chemistry is a very suitable topic for this collaborative link between Birkbeck and Bangalore and is ideal for training post-graduates in India. Firstly, it is an interesting and challenging field of research which has generated a great deal of international interest. Secondly, this work has an important personnel-intensive component. The latter is particularly important in such links for, in common with many developing countries, India has plenty of scientific manpower of excellent potential. Thirdly, this type of chemistry requires a large number of experimental skills at the laboratory bench that are fundamental to many areas of chemistry. Fourthly, this topic needs only inexpensive chemicals and basic laboratory equipment that are readily available in India. Finally, some phosphazene derivatives have been utilised in applied chemistry. They are of considerable interest to the textile industry (for example, as flame retardants); other uses are as speciality polymers. In addition, potential uses are now being explored in agriculture and chemotherapy. Of course, many other topics would be equally suitable for collaborative links and the choice of phosphorus-nitrogen chemistry simply reflects the past experience and present interests of the participants.

The general idea of the collaboration is that our Indian colleagues concentrate on the synthesis, separation and purification of new phosphorus-nitrogen compounds. This work is carried out by Professor A.R. Vasudeva Murthy, Dr. S.S. Krishnamurthy, and a team of four research students. At Birkbeck we carry out the instrument-intensive part of the project. Our contribution requires the use of sophisticated scientific hardware that is not generally available in India, partly because of expense and also because of the maintenance problems associated with a tropical climate. The general shortage of research funds in Science Departments in the U.K. is partly reflected in a serious decline in manpower. Ironically, it is often easier to obtain funds for spectrometers costing many thousands of pounds than the financial support necessary for research workers to fully utilize such instruments. Hence, one of the major advantages to both parties in an academic link between a U.K. University and a similar Institute in the Third World is the juxtaposition of their resources. We need hardly stress that the interpretation of this instrumental data forms an important additional part of the training of the Indian research students.

An essential part of this joint project is the close contact between teams of scientists. This involves common interests, good communications and the ability to complement each others' resources. We have already discussed the last point, but we cannot overemphasise its importance. It is vital that *both* parties in a link of this kind realise that they are making a substantial gain by pooling their resources. This is a particularly pertinent point to bear in mind in any collaboration, whether it be with the "developed" or the "developing" world. The success of the venture depends largely on *team-work*; the attitude that the Third World party is merely the recipient of Western benevolence would inevitably invite failure. We should also stress that differences in

Seated left to right: **Dr. S. S. Krishnamurthy, Dr. Rodney Kent (Glasgow University, visiting under Younger Scientists Exchange Scheme), Professor Robert A. Shaw, Professor A. R. Vasudeva Murthy.** Standing left to right: **M. N. Sudheendra Rao, A. C. Sau and K. Ramachandran (all have now graduated with Ph.D.).**

Left to right: **Dr. S. S. Krishnamurthy, Professor Robert A. Shaw, and K. Ramachandran in the laboratory, Bangalore.**

scientific outlook and training can actually be beneficial rather than adverse. Stubborn doctrinal attitudes are not at all uncommon in the scientific community. However, their tendency to develop in any particular group can often be minimised by intensive collaboration with another team some distance removed.

Good communications are of course essential if these academic links are to flourish. Although a great deal can be achieved by the exchange of scientific samples and data by post, it is desirable that one or two exchange visits of research workers take place each year. There are times when there can be no substitute for discussions of past results and future plans other than a meeting "around the table". Good communications obviously embrace good personal relationships between the participants. For example, a successful, small-scale, scientific collaboration between Professor Vasudeva Murthy in Bangalore and ourselves at Birkbeck was in existence for more than two years before official support and finance was granted to expand our joint work.[2] During this time, the lengthy negotiations for official backing were taking place between the participants and the relevant departments in the two Governments. Our "unofficial" research link not only enabled us to pursue common scientific interests with an ever increasing momentum but considerably strengthened our case when applying for financial support from our sponsors. We suggest that there are some important points to be learned from this approach by scientists seeking to launch collaborative ventures and indeed for administrators who are approached for funds or other help.

Since 1971 when the Birkbeck-Bangalore link was established, three students working in Bangalore have been awarded their doctorates. Four students are currently engaged in research work. Ten exchange visits have been made so far between India and the U.K. The two groups have jointly published more than twenty-five research papers in journals of international repute.[3] In addition, various aspects of the work have been presented at international symposia at Venice, Lund, Prague, Besançon, Bangalore, Madrid, Rabat, Kiev and Göttingen.

A further extension of the work has been in the field of agriculture. One of the phosphazene derivatives has shown considerable potential as a high-concentration fertilizer for the Indian staple crop, ragi (a type of millet that is grown extensively in Southern India). It would be an extra bonus to a project of this kind if our fundamental research studies could eventually make some contribution to developments in agriculture, industry and medicine, even though this was not the original basis for the scheme.

We have attempted to show a way in which the academic community of the developed countries can offer a tangible way of assisting scientists in different parts of the world. The finance required to achieve this aim is relatively modest and in the long term may form as useful a part of the assistance given to other countries by the U.K. as more expensive projects. However, it is very clear to us that these academic links must arise directly from the needs of individuals with common interests and agreed aims; we do not feel that they can be imposed from above, however well-meaning such intentions are. Finally, we must stress once again that any academic link requires a great deal of enthusiasm, persistence and an ability to appreciate each other's points of view. A successful link does not end with the approval of the project by the authorities concerned! A *sustained* effort by everyone involved is required and only then can the necessary interest and momentum be maintained.

Acknowledgements

We are indebted to the O.D.M., London, and the University Grants Commission, New Delhi, for their generous support and keen interest. We also thank the British Council for their valuable assistance. We are pleased to acknowledge the help we have received from other scientists in Bangalore, the U.K. and elsewhere for their ready assistance in solving specific problems that have arisen from the work carried out during this project. In particular, we should like to mention Dr. H. Manohar (I.I.S., Bangalore, X-ray studies), Professor T.S. Cameron (Dalhousie University, Nova Scotia, X-ray studies) and Dr. R. Keat (University of Glasgow, spectroscopic studies).

Notes and References

[1] Our article is a natural development of others in recent issues of this journal. The Swann report (summarised in issue No. 24) is also particularly relevant: "Collaboration in scholarship among equals" is a quotation from this report (Section 4.22) that succinctly conveys the spirit of our academic link.

[2] Professor Shaw visited many laboratories in India early in 1969 ("Commonwealth Education Co-operation Scheme; Visit by a Senior Educationalist"). In Bangalore, excellent personal and scientific contacts were immediately established with Professor A.R. Vasudeva Murthy, which led to the developments described in this article.

[3] A list of publications (and individual reprints, if so desired) can be obtained from Professor R.A. Shaw, Department of Chemistry, Birkbeck College, Malet Street, London WC1E 7HX, U.K. General articles on phosphazene chemistry and an account of international and interdisciplinary research collaboration (illustrated with many scientific examples) are also available.

The Rationale for the use of External Examiners in the conduct of University Examinations: The case of the University of Ibadan

Michael Omolewa

INTRODUCTION

The external examiner system in the University of Ibadan is currently being most vigorously criticised and questioned by the academic staff and faculty members of the institution. Many proposals have been submitted asking for the abolition of the system. Some of the suggestions are not as revolutionary; they ask for the restriction of the powers of the external examiner to review only and, as a matter of deliberate policy, for the use of personnel only from Nigerian Universities.

The purpose of this paper is to attempt to examine the genesis of the external examiner system in the University of Ibadan, to describe its operation and impact since 1949 when the system was first used at Ibadan University College. It is interesting to note that none of the existing works on the history of the University of Ibadan has adequately examined the important and topical subject of the external examiner question at the University.[1] A historical survey may assist critics in assessing the role of the external examiner system and identifying its place in the history of the University.

ORIGINS, STATUS AND DUTIES OF THE EXTERNAL EXAMINER

The external examiner system is part of the tradition of European and some American Universities designed to encourage contact among Universities to promote and exchange ideas. The system also attempts to guard against the danger of University insularity especially in the assessment of the quality of knowledge disseminated in a given institution. The external examiner rightly examines the institution including the teacher and the students. He usually offers suggestions on the development of the curriculum in a Department, and comments on the quality of teaching and the quality of students' scripts, dissertation or thesis. Existing external examiners' Reports refer to the *standard* of performance of students, their level of understanding of the subject and the suitability of the content of programmes of study. The assumption is that the external examiner would be a person distinguished in his branch of learning and eminently competent to make these types of observations and suggestions. He would, as understood from his designation, also be from the outside and sufficiently detached to comment on the academic growth in the particular discipline and/or subject.

The external examiner was, by the middle of the nineteenth century, part of the English tradition of involving leading experts in certification and examination at all levels. For example, in the 1850's Oxford and Cambridge were invited by parents to conduct examinations for Secondary school students in England after other Examining Boards were turned down because "public confidence had not yet been completely secured".

Furthermore, teachers were expected to assess the quality of students' performance using the "standard" criteria such as the examination of the content, the ability to write English, the logic of presentation and competence in analysis. At the end of the exercise the student either passes or fails or is referred. Thus examination is a serious business that invariably determines the future of the candidate.

Perhaps it is pertinent to note that the system of assessing the quality of teaching has also been popular in England since the same period. Arguing that there is need to evaluate teaching in schools, the great educationist, Mathew Arnold, observed in the 1850's that "there is now no restriction upon the exercises of the business of a school-master, and no enquiry made as to his qualification: the old provision which rendered it unlawful for any man to teach without obtaining a licence from the Bishop of the diocese has naturally and necessarily fallen into disuse".[2] Teachers themselves were equally anxious to be assessed in the age when the dictum was common that "He who knows, does; he who doesn't, teaches". And also in the 1850's some teachers at Leeds complained that they "have no means of showing whether they (their pupils) are well taught or not".[3]

THE INTRODUCTION OF THE EXTERNAL EXAMINER SYSTEM AT IBADAN UNIVERSITY COLLEGE

The external examiner system was introduced at Ibadan University against the background of its historical development. Firstly, it was pioneered by scholars who were brought up under the British and American traditions of the use of external examiners in determining the quality of the

degrees, diploma and certificates awarded by the new University College. Secondly, the quality of staff had little to recommend it: there were less than ten Professors when the College was founded and most of the other members of staff were first degree holders who were inexperienced and unrecognised in the international world of scholarship. The situation thus required the external examiner system to assure the international academic community that proper standards were being operated in the young University College.

The external examiner system was introduced in Ibadan in the 1949/50 session when external examiners were appointed by London University to conduct the Intermediate Science and second Medical examinations. The explanation for this action was the establishment of the Special Relationship scheme between the University of London (the mother Institution) and the University College, Ibadan (the child Institution), a scheme which provided for the moderation and vetting of all academic issues from Ibadan by London. Thus shortly before the appointment of the external examiners London University had approved the courses and syllabuses designed at Ibadan.

DEVELOPMENT AND IMPACT

From 1949 the participation of external examiners in examinations at the University College was an annual event. Among those who served as external examiners were distinguished professors and scholars from most disciplines established at London University. For example, the 1948/50 team included Professor E.R. Winston of University College, London and Professor Esther Killick of the Royal Free Hospital School of Medicine, London.

The external examiner system contributed substantially to the development of academic programmes at Ibadan. Teachers at the institution recognised the need to work hard before the "visitation" of the experienced and critical external examiner. It must have therefore been a great pleasure to the teachers when the Principal of the College in the Report of the Academic Board to the Provisional Council for the 1949/50 session noted that:

> Examination papers were set by members of the Staff of the College with appropriate modifications to fit the College syllabuses and were approved by the University of London as being of adequate standard. [4]

The Principal was also happy to state in 1950 that:

> The report of the examiners appointed by the University of London for this (Intermediate Science) examination, the first to be held under the Special Relationship, indicates that the quality of the instruction in the Faculty and the standards maintained are well up to University standards. [5]

University College staff were most determined to do justice in student assessment. The fact that external examiners would ask questions may have encouraged them in their mission. During its second session the College had the painful duty to ask 28 of its students, whose performances were of so low a standard as to render it unlikely that they might benefit from continued study, to withdraw. By 1957 the I.U.C. Visitation team to Ibadan reported that the Faculty of Arts was making "gratifying progress". And in 1960 the first Nigerian Principal of the College boldly declared that:

> For the first time, graduates wholly trained in the College are receiving the London M.B., B.S., degree. Thirteen out of the fourteen candidates we entered for this examination were successful, a pass rate of well over 90% One of the candidates, Mr. M.A. Bankole, gained honours in surgery. [6]

The external examiner arrangement with London was therefore a tremendous help to Ibadan as testified by the Principal of the College in 1960:

> Without the unstinted support and the unfailing guidance which we have received from the University of London, we could not have attained the maturity, the world-wide recognition which Ibadan has achieved in the short space of a dozen years. [7]

THE EXTERNAL CLAUSE IN THE UNIVERSITY OF IBADAN ACT

Clause 5 (4) of the University of Ibadan Act (1962) made the institution of the external examiner system mandatory to the newly established University of Ibadan for the clause directs that:

> Regulations shall provide that at least one of the persons appointed as the examiners at each examination held in conjunction with any course of study at the University is not a teacher at the University but is a teacher of the branch of learning to which the course relates at some other University of high repute.

The external examiner system thus survived the conversion of the status of the University College into an autonomous University with the right to examine, teach and award its own degrees.

Yet one of the primary objectives of the Ibadan authorities in seeking the new Act was the desire to be autonomous. Indeed as early as 1953 the first Principal of the College, Kenneth Mellanby, and his successor, J.T. Saunders, "recognised that an independent or self-governing Nigeria would be reluctant to allow its University College to be controlled by a University of another country".[8] The third Principal, J.H. Parry, announced in 1959 that the college intended to sever connections with London.[9] At the Foundation Day Address the following year Professor Dike repeated the same promise. In 1961 the I.U.C. Visitation team led by Sir Charles Morris, Vice-Chancellor of the University of Leeds, remarked that "as the College enters the third phase of its history, legislation is being drafted which, when ultimately enacted, will bring about the reconstitution of the College as an independent University with full powers to grant degrees".[10] And in 1961 Dike announced that:

> With Independence we shall take on the conduct of our own examinations, and a number of other administrative duties, now performed on our behalf by London University, will devolve on this College.[11]

Thus there was no doubt that the U.C.I. authorities were anxious to be independent and sovereign. The case for autonomy was strengthened when new Universities began to spring up in the country with independent status from the very beginning.

The question that could be asked is: was the external examiner clause a "Trojan horse" designed to bring London University in through the backdoor? The answer would be no: the clause required only external participation in University examinations.

THE CLAUSE AND EXTERNAL INFLUENCE

The external examiner clause was no doubt inserted to provide for external contribution to the growth of the University of Ibadan. Contributing to the debate on the University of Ibadan Bill in 1962, Dr. Nzeribe warned that "once a University fails to open its doors to people, professors and lecturers from all over the world, including students, that University degenerates into a village school".[12] Indeed, long before the insertion of the clause, University College Ibadan had actively sought the assistance of foreign Universities in its academic development. Thus E. Njoku of the Botany Department during the 1949/50 session "visited Manchester University to further his research and obtain equipment for his department".[13] Both Professor F.W. Sansome and Dr. Eva Sansome spent three months during the same session in the United States. While in the United States "valuable personal contacts were made and much material for teaching and research obtained as well as considerable assistance towards the more rapid expansion of the Botany Department".[14]

The external examiner clause could not be described as a symbol of continued dependence or reliance on the United States or Britain for academic leadership and guidance. It allows examiners from local Universities provided such are staffed by distinguished scholars in the area to be examined at Ibadan.

The question to ask is whether this system was part of the so-called culture transfer from Britain or universal and whether it supplanted an indigenous system (for Ibadan was the first University College in Nigeria).

THE DEBATE IN THE NIGERIAN PARLIAMENT

The external examiner clause was part of the original draft constitution submitted by the Ibadan authorities to the Federal Nigerian Government in 1960. The Government later set up a Statutes Committee to work on the draft. At his Foundation Day Address in November 1960, Professor Dike, the Principal of the College, informed his audience that plans were well on the way to give the College a constitution.[15] By 1961 the draft constitution of the University of Ibadan was submitted to the Federal Government.[16]

The Federal Government was however preoccupied with other matters which it considered to have priority. New Universities were being created; and other educational issues took precedence over Ibadan. It is perhaps pertinent to draw attention to the problems of Ibadan, given a Governor-General whose criticism of the University was not concealed and the perpetuation of the myth that Ibadan was one of the colonial legacies of the departed British.[17] Ajayi observes that "it seemed that as in the Federal structure power lay with regional leaders, the future lay with regional Universities".[18]

In April 1962 the property of the Nigerian College of Arts, Science and Technology at Zaria was transferred to Ahmadu Bello University; that at Ibadan to the University of Ife and that at Enugu to the University of Nigeria, Nsukka — all new Universities.[19] Ibadan did not benefit from this distribution of property. Later in the same month the Federal Parliament debated the University of Lagos Bill.

The Council of the University College, Ibadan, decided to send a delegation to the Federal

Government "to press for passage of the Act". The University of Ibadan Bill was finally tabled in the House of Representatives later in the year.

On December 10, the Second Reading of the Bill came up in the House of Representatives. Again Parliament had more serious issues before it, for the Second Reading fell into the period of the Action Group crisis and the formation of the United People's Party (UPP) under the leadership of Chief Akintola. The Minister of Education, Aja Nwachuku, anxious to get the Bill through quickly, explained that it was "non-controversial".[20] His main observation was that the Bill sought to confer "an independent status to our oldest University". Other speakers, notably M.A. Ajasin, Kalu Ezera, and B.U. Ezeribe emphasised the issue of autonomy. Thus other provisions of the Bill were not critically examined. And when Ezera digressed to comment on the provision for discipline, Wenike Briggs raised a point of order:

> The honourable Member is irrelevant. This Bill concerns the question whether the University College Ibadan is going to be known as the University of Ibadan or not. That is all; it has nothing to do with discipline.[21]

Ezera, who showed a greater knowledge of the provisions of the Bill perhaps because of his connection with the University of Nigeria, Nsukka, replied:

> The honourable Gentlemen who comes from Rivers does not know what he is talking about. There is a provision here, Mr. Speaker, which speaks of discipline . . .[22]

Rather than examine the clauses of the Bill, a Member of Parliament, Ayo Rosiji, seized the opportunity provided by the discussion of the Bill to comment on the "young professors" at Ibadan who were "not carrying on the tradition of academicians" as he identified it "in our student days in Cambridge".[23] But another Member, Reverend J.A. Akinyemi, cut in:

> The honourable Member is just an ordinary graduate.[24]

Rosiji replied:

> I am pleased that the honourable Pastor without a church knows that I am a graduate.[25]

A good deal of time was later spent on personal attacks and accusations. For example Chief O.B. Akin-Olugbade rose up to announce that "The House will remember that Mr. Ayo Rosiji had just been expelled from the Action Group".[26] And Mr. Briggs took time to "assure my honourable Friend, Chief Rosiji, that the Useless People's Party (UPP) is very far from the Action Group".[27]

After some further comments, observations and criticism of the University College, the Bill was passed later in the day with 221 in support and none against. The Bill had the Assent of the Governor-General on December 27, 1962.

It is interesting to note that there was no reference in the debate to the external examiner clause by any of the speakers in the Federal House of Representatives.

The assumption, of course, was that the external examiner clause did not negate the principle of autonomy of the University to teach, examine and award its own degrees, certificates and diplomas.

THE OPERATION OF THE CLAUSE SINCE 1962

By the directives of the external examiner clause, the external examiner took over the duty of the University of London Senate in approving questions and moderating examination questions.

Heads of Departments recommended names of distinguished Professors to Faculty Boards for appointment as external examiners. As from 1964 the Higher Degrees Committee of the University began to process applications from Heads of Departments for the appointment of external examiners to participate in the conduct of M.A. and Ph.D. examinations.

The external examiner system has succeeded in bringing into the University distinguished and eminent scholars such as:

Professor G.B. Hall, Department of Mathematics, University of Nottingham, England;
Professor Paul Mackendrick, Department of Classics, University of Wisconsin, United States of America;
Professor E.S. Graham, Rhodes Professor of Imperial History, King's College, London University;
Professor G.S. Nelson, London School of Hygiene and Tropical Medicine, London;
Professor G.C. Pugh, Department of Geography, King's College, London;
Mr. M.F. Thomas, University of St. Andrews, Scotland;
Professor John Yudkin, Queen Elizabeth College, London;
and
Professor R.E. Bradbury, Centre for West African Studies, University of Birmingham.

Scholars have also been attracted from Legon, Ghana; the University of Ife; and the University of Lagos.

If, as Abiri argues, the external examiner system was continued by the University of Ibadan "to preserve academic standards",[28] then the system could be commended for its contribution to the growth of academic excellence at Ibadan. All the Departments established at Ibadan have turned out post-graduate students and the theses and dissertations examined include:

Dan Fodio's Theories of the Jihad;
Warrant Chief System in Eastern Nigeria;
Sokoto in the 19th Century;
Politics and Society in Lagos, 1923-1960;
Nature in Vergil;
Soil Fungi;
Mycology;
Plant Pathology;
Iconosphere;
Magnetism;
Cardiovascular Studies in Man;
Animal Nutrition;
Retail Trade in Ibadan;
Monetary Economics;
Problems of Decolonisation;
Curriculum Organization; and
Educational Philosophy.[29]

Ajayi, one of those closely connected with the academic development of Ibadan University from 1963 as member of Senate, Dean, and Chairman of the Higher Degrees Committee, observes that adequate standards were maintained "largely through the judicious use of external examiners".[30]

Some external examiners have found their way to the University by virtue of their personal relationships with nominating Heads of Departments. This led to the possibility of abuse that could not be entirely guarded against even by the vigilant eyes of distinguished Professors, Deans and the Vice-Chancellor who sat on appropriate boards to approve recommendations. This was most probably because the nominated examiners were usually distinguished in their various fields.

Most of the examiners agreed with the verdict of internal examiners. In some cases some slight changes were made in marks awarded. The unanimity of decisions was however striking, even in controversial cases. For example, in arriving at a verdict on a Ph.D. thesis in Geography in 1966 the panel of examiners wrote:

> It was the unanimous view of the examiners that the candidate must fail the examination for Ph.D. in Geography, and shall not be permitted to resubmit his thesis for Ph.D. He did not fully understand the techniques he was attempting to employ, and hence was making numerous unwarranted deductions . . .

In a few cases there were major differences of opinion between the internal and external examiners. In such cases the external examiners were not invited for subsequent years. Some Heads of Departments attempted to discharge such examiners but higher Boards "guarded against the danger of discharging examiners whose views were not in conformity with the internal's".

THE CLAUSE AND NEW PROBLEMS

It is true that the clause did not foresee a number of problems. Firstly, it did not anticipate the rapid increase in student population at the undergraduate and post-graduate levels. Yet this development makes it difficult for an external examiner to perform his duty thoroughly. Secondly, it did not foresee a situation in which external examiners could see their trips to Ibadan as excursions or luxury tours. Thirdly, it did not envisage the adoption of the course system, and more recently the proposed semester system. Fourthly, it did not foresee the financial problems of the University which make it difficult for members of staff to get their salaries on time, to have a Research grant, or to make use of the Staff Development scheme. Lastly, it did not expect the onslaught on the so-called British educational values and tradition by those trained outside the system who have not given any careful consideration to its operations and values.

Perhaps the University ought to have considered the following points as possible solutions to the new difficulties instead of contemplating the abolition of the external examiner system:

> Appoint more external examiners to cope with the increase in work-load at the undergraduate level; external examiners could be under-utilized if their duties are confined to review.
>
> Arrange higher-degree examinations so that an external examiner could serve both the under-graduate and higher-degree students.
>
> Appeal to the IUC and the American Foundations which have been of great help in the past for funds to operate the external examiner system; encourage Heads of Departments to look for suitable personnel as a matter of deliberate policy from within Nigeria and the immediate neighbourhood to reduce cost.
>
> Cut down the fees paid to external examiners to reduce costs further.
>
> Appeal to external examiners to co-operate in the task of prompt examination of students and moderation of questions.

The University would be advised to:

Retain the appropriate Senate committees to check cases of abuse of invitations to external examiners.

Retain the appropriate Boards to examine various examiners' reports and make recommendations.

Educate all members of the staff on the background and tradition of the University's external examiner clause.

Resist the temptation to abolish the use of external examiners in the assessment of students (and staff?). And finally:

Do a project on the problems of the delay in communication between Departments and external examiners and see if it is easier to contact a colleague in Ghana than one in Maiduguri; or if mail from London arrives more promptly in Ibadan than that from Calabar.

CONCLUDING REMARK

It was no doubt desirable to have a mediator between a teacher and his students, the task done by the external examiner who could be trusted to be impartial and objective. This was without prejudice to the nature of the relationship between the Head, Supervisor/lecturer and the student. Furthermore there was the need to preserve standards.

It is not known how far these factors moved Dike and members of his team who submitted the University of Ibadan draft constitution with the external examiner clause. But there is no doubt that Dike was himself aware of the British tradition of neutral adjudication. It is also possible that as Nigerians he and his successors have been aware of the problems of social, ethnic, religious and other connections in the emerging nation, and with the issue of "contracts", "influence", interpersonal relationships, kinship and friendship ties, of the type that have tended to dominate Nigerian society.[30]

Notes and References

(I wish to thank Dr. G.A. Akinola for his helpful suggestions and criticism of an earlier draft of this paper; and the staff of the University of Ibadan Library and the Board of the Post-graduate School who assisted me in locating relevant minutes and documents for the study.)

[1] The most authoritative accounts of the University of Ibadan are:

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[2] Quoted in J.H. Higginson, "Evolution of Secondary Education". *British Journal of Educational Studies* Vol XX No. 2. June 1972, p. 168.

[3] For some discussion of the subject see J. Roach, *Public Examinations in England, 1850-1900*. Cambridge University Press, 1971.

[4] University College, Ibadan, *Annual Report of the Academic Board*, 1949/50, p. 6.

[5] University College, Ibadan, *Annual Report of the Academic Board*, 1949/50, p. 12.

[6] University College, Ibadan, *Principal's Address . . .* 1960, p. 5.

[7] University College, Ibadan, *Address by the Principal . . . to Congregation in Trenchard Hall on Foundation Day*, 17 November, 1960, p. 7.

[8] T.N. Tamuno, "The Formative Years, 1947-1956", in J.F. Ade Ajayi and T.N. Tamuno, *op cit.*, p. 30.

[9] R.A. Adeleye, *op cit.*, p. 73.

[10] Inter-University Council, London, *Report of Visitation to UCI*, January, 1961, p. 7.

[11] University College, Ibadan, *Address by the Principal . . . to Congregation in Trenchard Hall on Foundation Day*, 17 November, 1971, p. 3.

[12] Government of Nigeria, *House of Representatives Debate*, December 1962, Col. 2875.

[13] University College, Ibadan, *Annual Report of the Academic Board to the Provisional Council*, 1949/50 session, pp. 14-15.

[14] Ibid.

[15] R.A. Adeleye. "The Independent University, 1962-1968", in J.F. Ade Ajayi and T.N. Tamuno, *op cit.*, p. 74.

[16] *Ibid.*

[17] *Ibid.*, p. 72.

[18] J.F. Ade Ajayi, "Post-graduate Studies and Staff Development", in J.F. Ade Ajayi and T.N. Tamuno, *op cit.*, p. 160.

[19] Government of Nigeria, *Supplement to Official Gazette*, No. 28. Vol. 49, 5 April, 1962.

[20] Government of Nigeria, *House of Representatives Debate*, December 1962, Col. 2863.

[21] *Ibid.* Col. 2868.

[22] *Ibid. loc. cit.*

[23] *Ibid.* Col. 2872.

[24] *Ibid. loc. cit.*

[25] *Ibid. loc. cit.*

[26] *Ibid.* Col. 2873.

[27] *Ibid. loc. cit.*

[28] J.O.O. Abiri. "The Making of the University of Ibadan, 1957-62", in J.F. Ade Ajayi and T.N. Tamuno.

[29] See "Progress Report on the Development of Post-graduate Studies in the University since 1962", *Higher Degrees Committee Papers*, Meeting of February 7, 1967.

[30] J.F.A. Ajayi, *op. cit.*, p. 162.

[31] See S.R.K. Akinsanya, *"Silence: we speak English here: ethnicity, status and network in Lagosian schools"* (Ph.D. thesis, Wisconsin, 1974).

Is Traditional Medical Education Suitable for Developing Countries?

Frank Howarth

By "traditional Medical Education" is meant the procedure commonly adopted in the 20th century for the instruction of students of Medicine; from its pre-Hippocratic origins it developed by a process of historic accretion within the University system, arising in Europe in the 12th century A.D. (*Boyd* 1969).

After admission to a "traditional" Medical School a student is instructed successively by several Departments each specialized in one of the disciplines of Medicine, starting with those considered basic to the practice of the profession (preclinical period) and finishing with those required for the care of patients with particular categories of clinical conditions e.g., medicine, surgery, obstetrics; the clinical studies are carried out mainly in a Teaching Hospital. After instruction in each discipline the student is examined in his knowledge of that discipline and satisfactory completion of the Final Examinations in Medicine results in graduation as a doctor. This educational process is not directed by specified objectives, is costly, lasts about half a decade and teachers, though experts in their own disciplines are not, in general, trained in educational technology. There has been a tendency to modify this system in a few centres.

The characteristics mentioned above require elaboration to assess their educational significance; emphasis will be placed upon preclinical instruction which has disintegrated further than the clinical component.

NON-SPECIFIED OBJECTIVES

Most voluntary activities of individuals are directed towards some goal or objective. Sometimes, objectives require a complex series of operations for their attainment and intermediate objectives are then devised to act as stations *en route*. More specific objectives for the completion of particular contributory tasks may also be required.

In co-operative work such objectives are particularly important to ensure that all participants contribute to the attainment of the general objectives of the group, know what they are doing and why they are doing it. This is well known to modern business management as is the need for effective communication and the fact that personal objectives may differ from those of management. Following such principles the management of an airline may have general objectives concerning safety, world coverage, punctuality, economy etc. As one intermediate objective appropriate aircraft, pilots and crew would be required and the crew would have specific objectives in learning particular skills related to economical performance of aircraft, long distance navigation and detailed safety precautions. To contribute to the economy requirements, costs would be kept down by effective use of working time, equipment and supplies etc. Since the objectives of management are stated achievement can be measured e.g. by the inspection of records and, if necessary, appropriate modifications of objectives or procedures introduced. Though a passenger is mainly concerned in travelling from A to B he would clearly be interested in certain of the objectives of management and hence may expect to arrive at his destination on time and intact. Without an organization of this general kind an airline would soon have neither shareholders nor passengers.

One might expect that other institutions requiring co-operative activity, such as a Faculty of Medicine, might follow similar principles. In fact Faculty objectives (institutional, general) are usually either unstated or stated in vague unmeasurable terms. This makes it difficult to formulate lower level contributary (e.g. intermediate, departmental) objectives and to evaluate the system and its products (students) at all levels. Consequently, the student who, in the author's experience, usually has a clearer notion of his objectives than his instructors have of theirs is often unable to perceive the relevance of many aspects of preclinical teaching to the practice of his intended profession.

This paper is based upon the developing belief that perhaps the major objective of a Faculty of Medicine might be to produce doctors and that these should be generally trained. However, the required performance of a general practitioner is not obvious, few studies have been made, and depends to a large extent upon the environment in which he has to work. A theoretical solution of the

problem is particularly difficult for the staff of a Faculty consisting of medical specialists (some not medically qualified) who have never worked in this field. Some schools have developed general practice as a post-graduate "speciality" and if, indeed, the major Faculty objective is to produce general practitioners, one wonders how the multitudinous specialized disciplines of the traditional syllabus contributes to this end.

THE UNTRAINED TEACHER/ ADMINISTRATOR

In most educational and business systems it is agreed that a teacher or administrator needs to be trained. However, in most Medical professions with the notable exception of Nursing, the possession of a qualification, especially a higher qualification, is apparently believed to confer automatically teaching and administrative skills. The falsity of this belief has been demonstrated to all — especially to students.

THE DEPARTMENT

This may be described as a semi-autonomous unit concerned with teaching, research and administration in a particular area of study controlled by a Departmental head. The educational and economic characteristics of a Department are:

Educational

1. No clearly defined objectives consistent with the Faculty objectives (which are usually absent).
2. Mainly concerned with teaching its discipline with little reference to the performance of the graduate or its relationship to other disciplines of which the details of instruction are usually unknown.
3. Requires an extensive knowledge of its discipline, which is usually held to be the most important discipline in Medicine, curriculum approval being dependent upon the persistence of the proposer and ignorance and tolerance of colleagues.
4. Evaluates students in terms of their knowledge of its discipline so that preclinical students consider the examination an end in itself, a hurdle to be overcome before entering the Teaching Hospital to "start learning Medicine".
5. Is isolated from the community which the future doctor is expected to serve and from Medicine as a whole.
6. May consider itself a department of "pure science", the medical students then becoming dubious hybrids; since the staff tends to be non-medically qualified the divorce from Medicine tends to completion.
7. Individual techniques and minor disciplines within the Department tend to proliferate and eventually metastasize to form new departments, the relevance to living things often being indicated by adding the prefix "Bio" to their names. A curriculum is developed which invades the students' time as did that of the primary Department adding to the existing student overload.

Economic

1. Long courses because of inclusion of unnecessary disciplines or irrelevant aspects of necessary disciplines and the unplanned replication of teaching of other Departments.
2. Accretion of independent facilities which are generally required by all Departments, e.g. laboratories, animal houses, workshops, photographic and glass blowing units, libraries, conference spaces, stores, equipment, supplies etc.
3. Accretion of staff, academic, technical, secretarial and other, a consequence of the above and also required by the provision of several separate courses to serve students of different components of the Medical professions.
4. Inefficient use of working time, staff and students a consequence of the above and also of time consumed in semi-skilled operations, e.g. equipment assembly.
5. The idea that its importance depends on space occupied, the quantity of its equipment, the number of staff and hence the size of its budget ("empire building").

The educational and economic characteristics of the Department are those of disintegrated Medicine. Some centres have virtually abolished "pre-clinical" departments and this possibility was generally envisaged at the Teheran Conference on Medical Education (1970) and recommended by King (1975). The educational technology as applied to Medicine and now known as "Medical Education" has in some centres become a "Department".

The Cost

The economic consequences of departmentalization including the cost of the large building needed to house a departmentalized pre-clinical unit

explains the high cost of "pre-clinical" Medical Education.

Evaluation
In the traditional Faculty the student is examined in his knowledge of each member of a group of departmentalized disciplines mainly to determine if he may pass to a study of the next group or, in the case of the final examination, his suitability for graduation as a doctor. Since the Faculty has not made clear the desired performance of its graduates any relevance which these procedures might have to the practice of the graduate's profession are, to some extent, fortuitous.

In the clinical areas, Departmental material is also presented and examined in relative isolation presumably on the assumption that patients present themselves suitably labelled. A knowledge of "pre-clinical" material relevant to a clinical problem is required in clinical examinations, but the form and timing of the original presentation does not aid this performance.

Though the traditional Faculty is unclear about the intended capabilities of its graduates the staff will usually agree that they should be of "high quality"; this usually means able to perform well in Departmental examinations. If a high quality graduate is defined as one "capable of extensive use of pre-graduate learning in the solution of post-graduate problems" then little provision has been made by the Traditional Faculty for reaching this objective.

A discussion of evaluation techniques is beyond the scope of this paper but in all examinations the most critical measure is the pass mark. This is determined either by University Regulations or the opinions of examiners — a highly subjective measure. Refined arithmetic, a battery of computers and such concepts as "the minimally competent student" should not obscure this fact. Just how much of the professionally relevant aspects of a discipline must a student demonstrate at the time of his final examination to graduate in Medicine? The answer clearly depends upon the intended performance of the doctor as indicated by the Faculty and contributory objectives. Possessed of this data, an objective solution is difficult enough; without it, impossible.

THE HUMAN LEARNING PROCESS

Though opinions differ on the mechanism of human learning there is considerable agreement on the factors which aid it. The extent to which traditional Medical Education makes use of some of these factors is considered below.

Active Participation & Affective Experience of Learner
Effective learning requires effort or active participation of the learner and emotional experience plays an important role. Emotion may be of many kinds but in the classroom "reward" in the form of a sense of achievement is significant; the reward should rapidly follow an attempt. Affective experience plays a vital role in the development of attitudes.

Meaning
Meaningful material is more rapidly learned, longer retained and has a wider range of application than meaningless material. The meaning of an experience is in part determined by its context (see *Goal-Set*).

Goal-Set & Transfer
In any matrix of data what is learned and the method of learning is determined by the anticipated use of the data (see *Objectives*). It follows that material should be presented in the form in which it will be used; a conclusion supported by the known limited automatic transfer of human abilities from one kind of task to another. The significance of these factors has been demonstrated repeatedly. Goal-Set or anticipation is a major determinant of attention; lack of it explains the well-known inaccuracy of witness testimony in the Courts of Law; a witness usually did not anticipate anything, the event just happened in his presence.

Frequence/Recency
The frequency (revision) of the experience and the recency of the learning are important in subsequent remembering especially if they operate in the presence of the previously mentioned factors.

In the traditional Faculty, theory is mainly taught by means of the formal lecture; in this the teacher describes some structure or process, often adequately described in the approved text-book, which is written down by the student more or less verbatim. The student takes no active part in the learning process so experiences no affective involvement except, perhaps, boredom. Of course, the forthcoming examinations elicit considerable emotional response but since these take place considerably after the learning and the results are rarely discussed with the examiners, their contribution to the learning process is doubtful. Should the teacher present a reasoned argument or meaningful concept the meaning is not apparent to the learners who are engaged in ritual note taking — which notes many intend to learn uneconomically by rote. An inexperienced teacher may have a personal objective of demonstrating his erudition; this

ensures a maximum collection of irrelevant data. Usually, both teacher and taught are on common ground in their ignorance of the process of human learning. It is proverbial that in a lecture data "passes from the mouth of the lecturer to the note-book of the student without passing through the minds of either"; this is becoming embarassing in the latter part of the 20th century.

Practical work is often alleged to assist in understanding theory, but theory and the relevant practical work are often separated in time so that students may be conducting experiments on one system while receiving lectures on another. Consequently, the relationship between theory and practical class is often obscured as is the relevance of the latter to the practice of the student's future profession — an obscurity which, lacking clearly defined objectives, is shared by his teachers. Students commonly keep practical note-books separate from their theory notes. Commonly, the learner is expected to acquire some skill in carrying out manipulations on animals or animal tissue. These time-consuming operations are sometimes assumed to teach the student to handle living tissue, gain dexterity or develop respect for living things. These objectives are laudable but may not be achieved by a process of automatic transfer which the assumption demands.

In anatomy, dissection has the merit of student participation but considerable time is spent in operations with little relevence to the desired learning e.g. in cleaning the brachial artery not in learning its surface markings and relations. Eventually it is borne in upon the graduate that he examines patients through their skins and that it would be valuable if he knew what exactly lay under his hand. Unfortunately this important aspect of anatomy is usually relegated to an apparently trivial aspect of the discipline called Surface Anatomy. The graduate regrets the time spent on the sphenopalatine ganglion with which he has never had to deal and his defective knowledge of the hand, heart and brain which he sees damaged almost daily.

In summary, in many practical classes the future doctor performs manipulations which he will never perform again using equipment he will never use again upon preparations which he will never see again.

The student eventually arrives at the bedside of his first patient; here he discovers that the clinician expects information about the afflicted organ/system derived from several of the disciplines studied during the previous years. Eventually the clinician, in effect, remarks, "I don't know what they teach you in Medical School"; the answer is that the student was taught "discipline-wise", anticipated that he would require the data "discipline-wise" and learned accordingly; in fact the material was required in an organ/system form which he did not anticipate. Clearly both recency and revision factors are inadequately used in pre-clinical learning with respect to later application in the hospital.

After a sojourn in a Teaching Hospital during which the student sees some specialized procedures which he may never see again the student graduates and passes to the practice of his profession. Eve, who may have been the world's first physician and nurse, would not have been surprised at the community aspects of her activities, but to the new practitioner this experience may be startling; for he now has to deal with people moving in the community needing advice, certificates, and simple preventive measures or therapy not "cases" stationary in hospital beds isolated from people at large suffering from disorders often requiring exotic technology for their relief. The community aspects of his profession may have been dealt with in a course called Public Health or Community Medicine but this made little impact since it appeared in the curriculum with no apparent relation to anything else and, according to his clinical professors who may have read nothing of the subject since they were similarly afflicted, dealt mainly with lavatories and sewage.

The graduate is expected to conduct his affairs according to certain ethical principles; there may even be a brief course on this, but apart from undesirable political and religious procedures attitude induction is one of the most difficult technologies dealing with human behaviour. The traditional Faculty may not consider it a serious problem.

The new graduate may be informed by some humorous professor that he may now start to learn to be a doctor! This implies that he may now separate the wheat from the chaff of his half decade of teaching. This is perhaps the final indictment of disintegrated medical education. It might be said that a graduating student is required to tentatively assemble, mainly by rote, a multi-million piece intellectual jig-saw puzzle of which the parts are presented in apparently unrelated groups over several years, the final picture being unknown until long after the tentative assembly.

The extreme form of traditional Medical Education as described lacks objectives at all levels, ignores many of the basic requirements of human learning, is divorced from the community which its products are destined to serve, is prolonged, costly and controlled by untrained

teachers. It may be concluded that this form of education is, in general, less than optimal for any nation regardless of its developmental designation.

SPECIFIC DEFECTS FROM THE POINT OF VIEW OF DEVELOPING COUNTRIES

These defects are best considered in the light of the national need. For example, rural health care in most developing countries is unsatisfactory, a fact well recognized by Government, which requires generally trained, high quality (see earlier definition) doctors with ability to deal with this situation and to organize and operate Health Centres which are usually envisaged. This requires a knowledge of the local medical problems, of the environmental and cultural conditions in which they arise and the local facilities available for their resolution. Some administrative skill is also needed. The doctor must advise an often resistant community in control of its common diseases and this means translation of some medical concepts into local language. Conversely, if the doctor is required to teach potential medical personnel he may be teaching students in a language which is not their own. These operations require considerable educational skill.

The national doctor must also be self-reliant and able to carry-out basic laboratory procedures for diagnosis, therapy and research since sophisticated aid and techniques may not be available to him.

A traditional programme is more or less standardized and clinically orientated towards the problems of a "developed" country, spending much time, for example, upon coronary thrombosis and venereal disease because they are common and relatively little on leprosy, hydatid disease and trachoma because they are rare; the reverse of the requirements of some developing countries.

The developing country has a shortage, not only of doctors, but also of nurses, medical technicians, physiotherapists and other paramedical personnel. Speed and economy of production are therefore major considerations in all areas. Such personnel should also work as a Health Team and the establishment of appropriate attitudes and economy would be aided if all members of the team could, in part, be trained together; this may produce a rise in social status of non-medically qualified personnel who are often held in low esteem in developing countries.

High standards of professional behaviour are, of course, required but in the developing country with a short medical history particular attention must be paid to the development of appropriate attitudes.

Clearly, traditional Medical Education, especially if practised abroad, does not meet these requirements.

Should the developing country establish its own Medical School on traditional lines then, to the general defects, will be added the problem of high cost and large staff need especially in the Basic Medical Sciences where there is, at present, a world shortage. However, an attempt to meet national needs may be made by curricular modifications.

THE REMEDY

In theory the production of an efficient and economical system of medical education presents no insuperable problems. There are several such systems; most have in common the development of clear objectives towards the attainment of which all teaching tends and putting together into a composite whole (integration) the disintegrated fragments of Medicine.

The author is familar with one such system which is learning orientated, integrated, organ/system based and non-Departmental and uses multipurpose laboratories and centralized services. This system applies particularly to the Basic Medical Sciences (anatomy, physiology, biochemistry, pharmacology, morbid anatomy, microbiology, community medicine). The main features can now be summarised and the difficulties experienced in establishing such a system in various developing countries over the last 15 years outlined.

OBJECTIVES

These are determined by a study of the national need as revealed by Government development plans, the development of the local medical professions and health services urban and rural, present and future facilities for training and the educational status of the proposed student input. As an example, the needs of a developing country previously described may be taken as the basis of the educational and economic objectives expressed, in the case of the former, in terms of what the graduate should be able to do at the time of his graduation.

STRATEGIES

The educational strategies are mainly concerned with the utilization of major factors important in human learning, some of which have been mentioned previously, and in acquiring information, skills and attitudes appropriate to subsequent

professional practice. The economic strategies are mainly concerned with efficient space, manpower and equipment utilization.

EDUCATIONAL STRATEGIES

Anticipated use of data:

1. Pre-medical lecture/discussion on the nature of medicine and the contributions of its various components and disciplines and the insistence on medicine as a unit discipline. Introduction to use of library assisted by library staff.
2. Pre-medical lecture/discussions on the mechanism of the learning process so as to assist the student in devising appropriate learning techniques.
3. After presentation of each organ/system from the point of view of Basic Medical Science, clinical demonstration of patients suffering from disease of that system in the Teaching Hospital followed by discussion between staff and students, led by students, of relevant Basic Medical Science factors.
4. Students enter hospital in first weeks of Faculty admission.
5. Clinical orientation of Basic Medical Science teaching.
6. Staff/student committees to discuss academic goals and problems.

Presentation of data in form ultimately required:

1. Presentation of each organ/system of the body from the points of view of each aspect of Basic Medical Science successively.
2. Reduction of "Subject" teaching aided by virtual elimination of Departments within the Basic Medical Sciences and the use of multi-disciplinary laboratories.

Retention of previously presented data:

1. Summary and revision of Basic Medical Science information presented before major clinical demonstrations during clinical years.
2. Inclusion of relevant Basic Medical Science data in clinical examinations.
3. Discussion, led by students, in teaching sessions; problem solving stressed.
4. Practical classes closely linked with theoretical presentations.
5. Practical classes divided into "illustrative" and "skill learning", the former to illustrate theory often in the form of demonstrations with active participation of student groups, the latter concerned with repetitive and examined procedures relevant to future practice, e.g. blood films, stool smears, urinalysis and the use of "tools of the trade". Gross anatomy considered a major skill-learning operation.

Evaluation in accord with data presentation:
Organ/system based examinations in which a specified problem, clinically orientated if possible, is considered from the points of view of normal and abnormal structure and function etc. Theory examinations checked for specificity and clarity by multi-disciplinary Examination Board. Assessment of skills on-going. Examination performance discussed with examinee, difficulties identified and solved where possible.

Strengthen interest in and local application of community medicine:

1. Continuous and major representation of Community Medicine in the curriculum.
2. Combined with microbiology organ/system pathology and clinical demonstration with contributions by other relevant disciplines in a "communicable disease" course given in early years of clinical training.
3. Extensive field studies, identification of problems, data collections and proposed solutions by students.
4. Education in sociology, psychology and economics pertaining to the local community presented at intervals throughout the course of medicine.

Health team concept development:

1. Nursing and medical students share many classes.
2. Relationship of doctor/nurse stressed.
3. Medical and Nursing students work together in many practical situations.
4. Early clinical symposia shared. Nurses present nursing aspects of the presented problem.
5. Joint medical societies.

Medical ethics and professional attitudes:

1. Discussion of problems in this field.
2. Correct behaviour of staff.

Education Teaching Staff:
On-going workshops in medical education.

ECONOMIC STRATEGIES

Maximum space utilization:

1. Faculty buildings specially designed for organ/system based teaching using multi-purpose laboratories.
2. Reduction of waste space in building design.
3. Multi-purpose laboratories designed to meet practical teaching needs of entire Faculty and accommodating nurses and all envisaged para-medical students.
4. Centralized services laboratories, workshop, photography, lecture spaces, multi-purpose museum and seminar rooms.

Efficient utilization of working time, staff & student:

1. Wheeled transport system for moving major laboratory equipment from maintenance unit to laboratories (*Howarth* 1969) and experimental units permanently assembled and ready for immediate use.
2. Repetitive experimental teaching assemblies eliminated.
3. Non-Departmental organization facilitating integrated teaching, eliminating "Departmental" repetition of teaching material.
4. Reduction of staff needs by eliminating Departmental accretion and prolonged courses necessitating double streams of students.
5. Elimination of "empire building" and its costly consequences.
6. Dissecting time reduced and living human subject, prosected parts and radiology substituted.
7. Faculty programme using one specially designed curriculum passing from the general to the detailed permitting students studying several para-medical specialities to be taught in part simultaneously, being withdrawn from the course after acquiring sufficient data for their purpose.

Maximum utilization of equipment/supplies:

1. All teaching equipment/supplies held in common by all Basic Medical Sciences and under the control of the Basic Medical Science unit.
2. Equipment and supplies also held in common with Faculty of Nursing, technicians in training and all envisaged para-medical training programmes.
3. Non-Departmental arrangement eliminating Departmental accretion of equipment/supplies.
4. Use of multipurpose laboratories serving several disciplines.

Reduction of cost of equipment:
Provision of Faculty workshop to serve all units.

DIFFICULTIES

Difficulties may be divided into those anticipated and those experienced. The former were anticipated either by the author or critics without experience of the system.

Anticipated difficulties:
Contrary to anticipated difficulties it has been found that granted clear and understood objectives and adequate technology the non-Departmental unit requires less educational time, space, equipment and staff and is, under comparable conditions, by far the most economical teaching facility (*Howarth* 1965, 1969, 1970). A special building is ideal but not essential. Basic Medical Science "subject" teaching is discouraged but this does not inhibit research which is, in fact, facilitated by bringing together specialists in different disciplines and providing research time in uninterrupted periods. The curriculum is easy to design but timetables require more attention than in a traditional unit. The multipurpose laboratory presents no special problems in construction or operation and is by far the least expensive of all teaching laboratories; of course, it cannot accommodate more students at one time than a unidisciplinary laboratory of comparable size since floor area is finite but it can do the work of a large number of unidisciplinary laboratories, experimental assemblies being changed in a matter of minutes. Objectives may vary for different Faculties but the education of a student may be made appropriate to his needs. Adequate studies of the quality of graduates produced by this system or any other have never been made but experience of staff and reports of evaluators suggest that students are of high standard. Where training of nurses has been associated with that of doctors an improvement of local attitudes towards nurses has been inferred from discussions with parents and the rise of academic standards of applicants for admission to the Faculty of Nursing.

Students of this system may be no better prepared for "future advances" in Medicine than their traditionally trained colleagues but this is not remarkable since such advances are usually unpredictable — otherwise we should be making them

now! This system is not "liberal" in common with any educational system with specified requirements.

Experienced difficulties:
Successful establishment of a non-Departmental integrated teaching unit requires a senior staff, both academic and technical, convinced of its effectiveness and experienced in its operation supported by an informed, imaginative and determined University Administration (*Howarth* 1970). Under conditions which amount to a series of controlled experiments these statements have been confirmed. Under such conditions Faculties are established rapidly, decision-making time reduced and the educational and economic strategies justified. When these conditions are modified the Faculty tends to revert to traditional operation. The main cause of this reversion is the influx of traditionally trained local and foreign staff unable or unwilling to accept new concepts sometimes supported by the similarly trained local profession.

Local staff returning with post-graduate qualifications may consider themselves skilled teachers and administrators despite their lack of training and experience in either field and such attitudes inhibit further learning and lead to the feeling that they should be head of a Department. Non-Departmental organization seems to deny them this opportunity and to become head of a major multidisciplinary operation does not appeal since it is outside their experience. Such staff may be narrow "subject specialists", especially if they are non-medically qualified, and incapable of integrated teaching which they tend to regard as diminishing the importance of their own discipline which they teach in excessive and irrelevant detail. Since students usually appreciate the value of integrated teaching complaints may arise. The appointment of a traditionally trained Dean usually ensures reversion. It is sometimes felt that criticism of the traditional system challenges the value of qualifications obtained by it and this produces antagonism.

Close temporal association of information from several disciplines pertaining to a particular organ/system does not ensure that students will base their learning upon the organ/system under study; they still tend to keep notebooks with subject titles. This is encouraged by the lack of adequate integrated textbooks in the Basic Medical Sciences. Rectification requires an "integrated" teacher with a broad knowledge of medicine and considerable experience — for the best integration occurs within one mind; such are very rare.

National attitudes such as a desire to copy a well known medical school (traditional), to build a costly and prestigious establishment, or a feeling that the nation is subject so some dangerous experiment may also hinder development. Political, religious and racial problems may also impede development of institutions, especially those rendered vulnerable by their unusual character.

Where nurses and medical students share entire courses e.g. Community Medicine, no problems have been experienced, nursing students often occupying the top class positions. Where courses were shared only in part with teaching passing from the general to the detailed, nursing students being withdrawn after the general presentation to pursue professionally relevant aspects of the study, problems were produced for the inexperienced specialized teacher.

In summary, without careful control of the education of local staff and selection of foreign staff on the basis of their past educational experience a developing Faculty is likely to become traditional in type and in due course a costly and enduring national embarassment since the reluctance of Departmental heads to relinquish their "empires" makes it difficult to convert a traditional School to modern educational practice. This tendency to traditional reversion has been noted by *Moodie and Eustace* (1974) in mainly non-medical institutions. In their justification of the Departmental system, which takes little account of students, these authors state: "recent innovations have served only to demonstrate the inherent strength of the department and faculty concepts, as well as their capacity to survive through internal evolution". Similar statements may refer to war and many other kinds of human suffering.

"The factors which have sustained the traditional departmental divisions continue to operate in any circumstances" (*Moodie and Eustace* 1974). It appears essential that the factors be identified and examined; some of these are obvious, such as inertia, difficulties generally inherent in modifying a deeply entrenched system, ignorance of educational process, confusion of research and educational responsibilities of Departments, desire for power of existing and potential Departmental heads and feelings of insecurity in a specialist academician exposed to a larger concept of Medicine. There are probably many more. The object is not necessarily to eliminate the Department but its flagrant educational and economic evils. The formula is awaited, the technology is available.

There can be no doubt that the traditional departmentalized system will be replaced by more efficient procedures. As agents of change the developing Medical Education groups have a leading role especially those which are international and itinerant such as the workshops established by the World Health Organization. These workshops should seize the opportunity of educating young academics and should not become departmentalized, isolated groups of minor subspecialists.

A TRIBUTE

Many illustrious doctors have emerged from Traditional Medical Schools. This is a tribute to the excellent performance of both teachers and learners despite the system in which they were enmeshed. A good carpenter can drive in a nail with a wrench but with a hammer he could do a better job. This last sentence is a summary of the thrust of this paper.

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University of Ilorin: Vice Chancellor Professor O.O. Akinkugbe, with student hostels under construction.

The Development of New Universities: Administration, Management and Planning

(The following papers were delivered at the Sussex Seminar in 1977)

(1) Management Information for Planning

G. Lockwood

I was given no choice in the determination of today's title. Although I have written about Management Information and I have published more extensively on Planning, I have always refused to give a talk about Management Information and I have consistently refused the many invitations I have received in recent years to talk about Planning.

I have also always been diffident about lecturing to Vice-Chancellors — at least when more than one of them is present.

Fortunately, although I'm stood here in front of distinguished Vice-Chancellors on an occasion billed as Management Information for Planning, I don't have to break any of those three resolves. My purpose is to introduce a discussion rather than to give an elaborate and detailed view of Planning in Universities.

In any case I'm sure that you are all familiar with the concepts and language of planning and I would therefore like to concentrate on making two basic points about planning.

Firstly, it is an over-used word. Fashion is as prevalent in the language of University Management as it is in the world of female dress — and it is less attractive. In the early days of this University I do not remember the word "planning" having much use, and certainly no special meaning. Sussex in the early 1960's was in essence the distillation of the experience of British Universities over the previous thirty years seen in the context of the next thirty years. That achievement was not attained by means of a formalised planning process, by the use of analytical techniques or even with the aid of a development plan. It was achieved by bringing together men of experience, energy and ideas whose discussions led to the formulation of concepts and values. In the later 1960's the University's decision-taking structures were transformed into the language of modern management science; the Planning Process at Sussex received worldwide renown as the first major corporate and participative process in Universities; management information, devolution of initiative, budgetary virement, resource allocation norms and all of the other words came into being and filled the pages of our committee documentation. By the mid-1970's "planning" was a word whispered in secret amongst the faithful, "norms" were quaint reminders of history, and instead people began once more to point to the need for small groups of experienced men to distill experience and take creative, positive and selective decisions about the future of the University. The wheel had come full circle.

I don't wish to explain all of the factors which led to those changes of style; they were to do with changes in national policy and economics, with expansion/contraction shifts, with changes in internal personnel etc. I simply wish to point out that changes in the style and language of University Management tend to be cyclical and the over-use of particular words, like planning, leads to their degradation.

My second main point is that "planning" is a mis-used or abused word. In all three of the phases of the history of this University to which I have referred planning was taking place. It was merely the style and description of planning which changed. In essence, planning cannot be avoided. My definition of planning is that it is the continuous and collective exercise of judgement in the taking of decisions affecting the future. Despite the obvious linguistic complications planning is not necessarily concerned with the formulation of plans; it is a process which can continuously adjust the present state without necessarily ever producing a fixed plan.

Planning is thus a decision-taking process yet the word has become mis-used, and to many people it represents a set of systematic techniques. Planning specialists as a breed should be treated with caution. They are salesmen and it is often in

their interests to surround planning by a mystique which then requires their services to unravel and implement. Planning does not necessarily require computers, mathematical models, systems analysts and so on. Planning is people making decisions collectively about the future. Of course it needs data and analysis but what I am trying to emphasise is that it is more important to have the right people in the right setting; the mis-use of the word has led to too much investment in the tools of planning and too little investment in the people taking the decisions. When Lord Fulton used to consistently remind members of our committees that they were taking decisions which would affect the shaping of young people's minds, who would reach their full impact upon society and occupations in the 21st century, he was undertaking a more effective and direct planning function than any of the management information inputs favoured by the planning specialists.

Having concentrated on those two points, may I make three subsidiary points.

Firstly, I am not opposed to the tools of planning; it is just that they have to be seen in perspective. For example, many of them such as mathematical model-building, the famous PPBS system, and so on, were designed for enterprises other than Universities. In particular, enterprises with more easily defined and concrete goals and enterprises of large scale. Universities, even those of up to 15,000 students, are small scale organzations by the standards of modern life — and they should carefully examine the economics of cost-benefit before investing in fashionable technology for administrative purposes.

Secondly, institutional planning has to be related to national planning. Planning has much to do with maximising the ability to change and the opportunity to change. The ability to change is a largely internal matter, to do with the creation of internal attitudes towards change, the maintenance of zones of flexibility and the existence of incentives to change. On the other hand, the opportunity to change is more a matter of relationships with external planning. There is no point in the University having the ability to change by, say, taking in more Science students if the national government isn't prepared to finance those places or if the Science applicants do not exist. The real cutting edge of internal planning is thus being ready to take advantage of the opportunities presented by national trends and being able to predict those trends by having one's "ear to the ground" in places that matter is essential.

Thirdly, I believe strongly in the integration of planning within a University; academic, financial and physical planning should not be separated; similarly annual, mid-term and strategic planning must be integrated. Those beliefs point strongly to the need for a Planning Committee and for an administrator responsible for the co-ordination of planning (though most of the staff work for planning should be undertaken by the administrators also responsible for operational activity).

In conclusion, therefore, may I reiterate that planning is no more than people making judgements and in small scale institutions like Universities that does not require elaborate technology. Since there are some people present who have read my articles and book on planning may I stress that the views I have expressed today are quite clearly stated in those works, though they have often been overlooked.

(2) Administrative and Governmental Systems in Growing Universities

M.L. Shattock

This is one of only two sessions on the mechanics of actually running a New University. Sunday mornings, especially after dinners in Brighton or the mysterious charms of the grocers' striptease artiste, are perhaps not the most stimulating times to talk about problems of University administration so I will try to raise some general questions to rouse you to discussion.

In deciding on the title of the session I deliberately coupled "administration" with "government". I do not see in any case how in a University context they can usefully be separated, except in the most academic of discussions, but in a new University, where almost every action in the early years creates a precedent for the future, the administrator and the academic (or indeed the lay member of Council) share a responsibility for establishing the administrative and decision-making structure in a way that will probably never be repeated in their University's history.

There would be little disagreement I am sure with the proposition that there is no single "right" way to do anything in a University. Constitutions and administrative practices vary from University to University and in my experience in various

University of Maiduguri: Lecture Theatre.

systems and various countries there is not much point in trying to lay down general ground rules which distinguish University practice from practice in other institutions. Just across the Channel, for example, (no more than thirty or forty miles away from where we are now sitting) there are institutions bearing the historic title of University which have a degree of difference from the U.K. model far exceeding the degree of difference which exists between U.K. Universities and Polytechnics. So the man who stands up in Senate and argues that such and such a proposal should not be accepted simply because it was not the practice in his former University (however reputable the University) does not seem to me to have put forward much of an argument. Should students be members of the Senate because they are in some U.K. Universities? Should Senates be small elected bodies (as they are in some of the U.K. New Universities)? Should student residences be mixed or single sex because this is what they do now in either the U.K. or the U.S.? I have heard all these questions debated in your Senates. It is true that there are fashions in these things and a change in practice in one University can often become a slogan for reform in another but the fact remains that almost anything is done (or at least is said to be done) somewhere. The real question is what does your institution want to do. It has always seemed to me that the best and most enduring decisions our new Universities took were those that were not handed down to them by the U.G.C. or by practice elsewhere but were the ones they worked out for themselves. It was by these decisions that they proved their autonomy and established their individuality as institutions. There is no substitute, tedious and time-consuming as it can sometimes be, for a University thinking out its own solutions to problems. Take what

evidence is necessary from elsewhere but make your own decisions based on whatever principle, hunch or even prejudice seems the best founded.

If we accept this general rule it is doubly necessary to ensure that a University's decision-making structures and its machinery for implementation of decisions are effective and consistent with one another. Again it is difficult to make general prescriptions because of diversity of practice but I suppose all the Universities represented at this Seminar lean more towards the U.K. than the U.S. model. We all have, for example, a bicameral governing structure (i.e. a Council and a Senate with a theoretical separation of management and academic powers) and not the unicameral structure commonly found in the U.S. where the Regents or Trustees have legal authority over both managerial and academic affairs. We have Vice-Chancellors whose formal powers, as they appear in the written constitutions, are not extensive, but whose informal powers are considerable, and not Presidents whose formal powers though magisterial depend on a delegation from the Regents or Trustees, a delegation which can always be revoked. Most important of all, our constitutions provide that our decisions are taken through formal committee structures rather than, as in the U.S., executively by a President, Vice-President or Dean.

This is not the place to argue the merits of one or other system. A former Nigerian Registrar has written an entertaining novel illustrating the dangers of running the two systems in parallel, that is trying to run a U.S. administrative structure within a U.K. constitution. All we need note at this stage is that if Universities have constitutions they should operate within them, in spirit as well as in law, or they leave themselves open to future challenge by internal or external critics.

The essence of the U.K. model is a separation of functions between University government and University administration. The committees take the decisions, the administrators implement them. The Franks Report on the government of Oxford says that "the value of an efficient civil service in a university is that it makes it possible even with a complicated structure to practice democratic control by academics of the policies that shape their environment". But, the Report goes on, the officials are not just silent minute takers. "They should be expected to inform and advise in the course of the meeting they attend. But they should not vote; nor is the responsibility for decision theirs". There is an element of unreality in this clear separation. When your campus comprises 10,000 acres of virtually uncleared bush and you have to build and manage your own hydro-electric schemes, road system and water services, as well as build and manage a major academic installation it is sometimes difficult for a Registrar to recognise this is the limit of his powers. I, for one, would certainly argue that if a Registrar's advice is taken and is subsequently found to be faulty then he must at the very least share responsibility. If on the other hand his good advice is not taken, one must hope that by the same token he can enjoy the luxury of an occasional "I told you so". Even Registrars are human, despite some opinions to the contrary. Nevertheless just as the Vice-Chancellor's powers are circumscribed by the powers of his Senate and Council so the Registrar's are by his lack of the power to vote and his function as secretary not member of the University's governing bodies.

I have tried to deal so far in principles of government and administration. I should now like to turn to the practice as we have seen it in the U.K. New Universities. From the beginning, the prospects in the U.K. New Universities, both academic and administrative, attracted young, able and ambitious staff, and I am glad to say they still do. Although only East Anglia formally adopted the motto "Do different" I suppose most academics in most of the new Universities saw the newness of the institution as an opportunity to jettison much that they found unsatisfactory in their previous University. The atmosphere was exciting, things were always happening, fundamentals were constantly being questioned and every decision posed problems of principle as well as practicality. I think it is fair to say that enthusiasm was sometimes substituted for a clear sighted recognition of the realities. The energy expended on quite simple questions was sometimes a little frantic, and I suspect that teaching and research occasionally took second place to "the great issues of the day".

Managing an institution in this atmosphere has its problems. Some Universities like Sussex and East Anglia chose to devolve decision-making downwards at quite an early stage and decentralised their adminstrations accordingly to Schools or subject areas. Others like Kent, Lancaster and York had collegiate systems so that some social and academic questions were dealt with on the collegiate network. Warwick on the other hand chose to remain administratively centralised while delegating academic initiative down to subject groups which rapidly developed into departments. It seems to me that there are arguments for all these

approaches. A wholly centralised administration is very demanding both on the administrators and on the central committee structure: you need high calibre adminstrators who can see problems "in the round" and not just as isolated questions to keep the machinery going and you need some devoted academics who have a real interest in synthesising policy questions and committing themselves to a University view. When it works well it can work very well indeed and can give the institution an ability to respond quickly and effectively to external factors. On the other hand it can degenerate into a deadening bureaucracy and it can get out of touch with the feelings of the average member of staff. A decentralised system can produce different problems. It can be expensive because of the duplication involved and it can be divisive because of the tendency to develop parochial rather than University interests. On the other hand it takes decision-making and administration closer to the average academic and can leave the central authorities clearer to deal with the main University policy questions. The only golden rule that I think applies is that administrators wherever they operate at departmental, faculty or central levels should be on the Registrar's staff and, whatever their local chain of command, should be centrally responsible to the Registrar. In this way a devolved system can to some extent be knitted together and communication between the centre and the periphery maintained.

A new University never stands still. As distinct from older Universities which have perhaps reached a steady state in terms of staff and student numbers, the new University is growing each year. This brings a whole new series of pressures into play. The decision-making and administrative structures that were appropriate for a University of say 1,000 students can be quite inappropriate for one of 3,000. The U.K. Universities have hardly been a haven of peace in their 10-15 years' existence. Their students and staff have tended either together or separately to let internal disagreements spill over into "sit ins", disputes and the columns of the national press. Most of them have found the need at some time or another to invite external, or semi-external, figures to supplement internal commissions or reviews, to examine their structures to see how far they could be changed to match more closely the aspirations of their members. The outsider reading these various reports in tranquility comes away with an impression of a great deal of misdirected energy and an over concentration on abstract principle. The most common complaint, however, that these reports throw up is always lack of communication within the University. Again the outsider will find this a trifle bizarre if only because the main evidence of all the reports is the enormous amount of internal communication that is already going on as compared with what happend in older and more settled institutions. The explanation I think is two-fold: first the growth of the University means that the intimacy of the first years (often the subject of some myth-making by the founding fathers) is reduced. Thus the demand for better channels of communication is often a reflection of the intense desire of staff and students to remain involved at a time when their involvement is inevitably reduced by the sheer numbers of people wishing to take part. The second is that the machinery of government just becomes clogged up by dealing with the kind of details that were proportionately more important in the early years, at a time when increased size has greatly increased the amount and complexity of business.

I do not think there are simple solutions to these problems. I am sure it is significant that most of our New Universities seem to have run into stormy weather at about the 1,500 to 2,000 student mark. The only lesson to be learned, I suspect, is that University authorities must not allow the narrower administrative problems of managing a growing institution to distract their attention away from more general problems of University government. As institutions grow they change in many ways and their machinery of government and administrative structures need to take account of the changes. Whether these changes should be introduced after a formal review or as a result of evolution is a matter for local decision. The important thing is to recognise that changes must be made so that you are ahead of the game and can influence it rather than simply reacting against internal and no doubt vociferous pressure.

There can be little doubt that new Universities are exceptionally demanding on their administrators and Universities need to recognise this. In the steady state University you can recruit a man for a particular administrative slot with the knowledge that the procedures are firmly established and unlikely to suffer too much change. This certainty is almost wholly absent in the rapidly growing new University where rather than select a man for a particular job it is probably wiser to pick a man on the potential you expect him to have for contributing over a wide range of duties. Events probably move faster in new Universities and your administrators must be able to keep up. Administrative breakdowns in such an environment may also cause more damage than in older institutions if

only because there are fewer people who can step in and rectify the errors. All this suggests that Universities should take a very positive attitude towards staff development and training schemes generally. It is tremendously important that the administrators develop a pride of institution and a corporate identity so that when the troubles come they keep their heads, maintain their discipline and retain the trust of the University at large in their impartiality as committee secretaries or as administrators generally.

Everyone has his own hobby-horse, I am sure, on staff development. I can only say that at Warwick (and I think what I am going to say applies more or less to all the new U.K. Universities) where I have in the Registry a staff of 18 graduate administrators (including three who are primarily involved with the computer) I look for staff who are as well qualified as academics but who have a potentiality for developing the broadly based approach required by the administrator. A good number of them have first class honours degrees and only a minority have no research experience. Four or five of them do a little teaching in departments, but nearly all are qualified to do so. If you are going to recruit this kind of man (or woman), you must recognise that in the early years he may need more supervision and personal attention and more training than the more sober, duller individual. But this potential is that much greater and in the end, if you can afford the time and effort involved, you will get a better administration, more in tune with your academics, and more imaginative in proposing solutions to apparently intractable problems, than the perhaps more traditional kind of university administration.

A concern for staff development should not be restricted to the non-academic administrator. One area where I suspect the U.K. New Universities rather failed was in their assumption that young lecturers or senior lecturers appointed to a New University as a professor on research criteria could instantly assume the mantle of the accepted professorial role in University government and administration. In my experience the art of good chairmanship of meetings is a very scarce commodity nowadays. A new University could make an immediate contribution to the quality of its management if a few informal seminars were given in this neglected area. Again while I have little sympathy with the mission of certain elements in the Institute of Education at London who seem to want to make a career out of training people to be heads of departments on the basis of abstract principles, I do think that informal sessions on the managerial side of a head of department's function looked at not from the standpoint of general theory but from the position of what he is actually required to do in his own university would represent time and energy well spent. And the heads of departments perhaps need reminding that they have an essential staff development role themselves in relation to their own youthful academic colleagues who may have little teaching or independent research experience. Informal joint sessions on general policy questions between academics and administrators are also a good idea in an institution which in its early years is probably in such a hurry that everyone is too busy to keep one another abreast of events on a casual basis. In general I believe the U.K. New Universities relied on an expectation that these things were not necessary and that everyone would fit into his new role harmoniously. This has not always been the case.

I have perhaps stressed the more painful aspects of life in a new University. Perhaps we can take comfort from Cardinal Newman who, in the process of founding the National University in Ireland, wrote in 1851: "Among the objects of human enterprise . . . none higher or nobler can be named than that which is contemplated in the erection of a university. To set foot and to maintain in life and vigour a real university is . . . one of those greatest works, great in their difficulty and their importance on which are deservedly expended the rarest intellects and the most varied endowments".

If in a University's earliest years administrators and academics can be encouraged to share this concept of the importance of their task, the University has a good chance of success. But we should not disguise from ourselves that founding a new University is a major undertaking which can go badly wrong without good government and effective adminstration.

Review

J.H. Sislian

Asavia Wandira, *The African University in Development*. Ravan Press, Johannesburg, South Africa 1977, pp.136
Obtainable from: Hans Zell Publishers Ltd., P.O. Box 56, OXFORD. OX1 3EL, England

Whether one sees this forcefully written book as depicting the African University in unrelieved gloom based on unremitting but sound critique or whether one looks at it as an apocryphal manifesto deriving its inspiration from apodictic statements and assertions on African mansions of higher learning in our day, one thing is clear to the reviewer: the unimpeachable sincerity of its author and his full mastery of a most intricate aspect of African education. Despite its size the book is going to be a standard reference work on the subject for many years to come.

The book consists of five essays entitled Problems in the Concept of the University and its role in African Development from Jones to Yesufu; The Special Tasks and Problems of the "One-University" Institution in Middle Africa; The Role of the University in Out-of-School and Continuing Education for Human Resource Development in Africa; The Role of the University in the Recruitment and Development of Academic Staff; Concluding Remarks: The General and the Particular in African University Development.

The author's leitmotiv is not new: Africa, having experienced in the past the superimposition of an alien idea of a University, finds it falling short of satisfying her needs, which since attaining Independence must obviously be seen in a different context than the colonial one. In other words the author's great concern is with Africa's seeking and finding "The African University in Development". If this is a clear and legitimate aim (and no one in the academic world would pick a quarrel with that) the next step to analyse then would be to look into the means of establishing a University having an African "identity". This the author does most meticulously as befitting a man with as distinguished an academic career as his.

For instance, the need for the African University to adjust herself to the African context, the role she has to play in both community and national development, how she should handle educational wastage, what is to be done with unemployed academics, how to upgrade University staff, how to implement localisation or indigenisation and a host of other extremely delicate problems have to be looked into systematically to find the right path to attaining African identity.

But this would be begging the question as long as the African University fails to define and implement new conceptions of Universities "which they will wish to cherish for years to come". Furthermore, the meaning of "agents of change" must be analysed afresh in the African context if African countries wish to work with them "rather than fight them".

Like a medical expert the author skilfully diagnoses the causes and symptoms of the state of health of African Universities and proposes measures for their treatment and cure. The African University is not, it is implied, enjoying today as excellent health as one would wish her and one which she rightfully deserves. This state of health could be reversed if the African University takes full cognizance of her immediate environment and needs rather than preoccupy herself with her foreign origin. The best form of Universities suited to African needs within the African framework would result only when and if successful innovation within the existing institutions of higher learning can enable the African "to prove himself and preserve that which was peculiar to his culture". Failing this the Africans will continue to be a deprived people, since the Africans had to give way and make room for British Universities which became "outposts of European culture" on African soil.

As alternatives to these "outposts" the author then draws the reader's attention convincingly to the slowly emerging African Universities which will have to find new approaches to problems of education in developing countries in general and to problems of African higher education in particular.

Having presented his case in a persuasive manner for the need for a really African University the author throughout his book unmistakably implies that the full realisation of the "new" African University will ultimately depend on nothing less than African "ability" to create this new University. This ability according to the author, obtains among Africans having a sense of responsibility and a feeling of dedication. The publication under review is obviously some proof of this.

Information and Report

*Theatre Studies at U.C. Cardiff

John Linstrum

Cardiff and the Arts

In recent years the image of Cardiff has changed out of all recognition. During the sixties theatres were being demolished to make way for the inevitable office blocks, or being translated into places which showed dubious films to cheerless audiences. This picture was not restricted to Cardiff and is, unhappily, still happening occasionally in some parts of Great Britain. However, Cardiff has emerged from this period of destruction and is in the process of building a new name and image for itself. The theatre and the arts in general occupy an increasingly important part of public life: the national papers regularly carry reviews of plays, concerts and exhibitions that happen in Cardiff, and although it would be foolish to suggest that there is little that can be improved upon in the arts-scene, nevertheless there is much credit to be given to the people who have helped to create what we have now in 1978.

The University College has properly taken its place in this renaissance of art, music and theatre. Some nine years ago it launched a project for the building of an arts complex called the Sherman Theatre, and in this made the courageous decision to build a University theatre that was for the public and would be at the same time effectively a department of the University. Naturally this was not determined upon without opposition: there are always people who are ready to claim that although the arts should have a place in society it should never be at the expense of anything else, and that any other venture should be preferred to a theatre. However, despite the opposition, both traditional

The front of The Sherman Theatre, University College, Cardiff.

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and financial, the Working Party persevered and built its own arts complex.

This must have been the right moment for such a decision to be taken because it was not in isolation that the Sherman Theatre began to take shape in Cardiff. At the same time another arts centre was being developed and opened about a mile away in a disused school building. This was to be called Chapter, and is still thriving as an arts centre, offering theatre, films and exhibition space as well as workshop accommodation for the visual arts. The theatrical events at Chapter are generally of a different nature from those that are offered at the Sherman Theatre, so the two places can genuinely be said to complement each other. The Chapter Arts Centre is quite separately financed and administered: the connections between the two centres exist because of a common wish to provide places and events appropriate to their own policies.

Apart from these two major performance centres there is also Llanover Hall, a centre for the arts for young people, where the local authority and the government have not only provided the money for premises and staff in all the various practical arts, but have financed a Theatre in Education team called Action Pie that is based there and works in schools and youth centres throughout South Glamorgan.

Cardiff is an ancient foundation with a very impressive castle right in the centre of the city, and has, because it is a capital city, most of the government offices to do with the legislation and administration of the Principality of Wales. It also has a very large percentage of students in its population because educational places of all sorts tend to group themselves round capitals and centres for a region. Cardiff is the centre for the heavily populated S.E. corner of Wales, and has over 8,000 students there during the academic year. They may be studying at the University of Wales Institute of Science and Technology, the Art College, the Welsh College of Music and Drama, the Cardiff College of Education, the Welsh National School of Medecine or at University College itself.

The Sherman Theatre

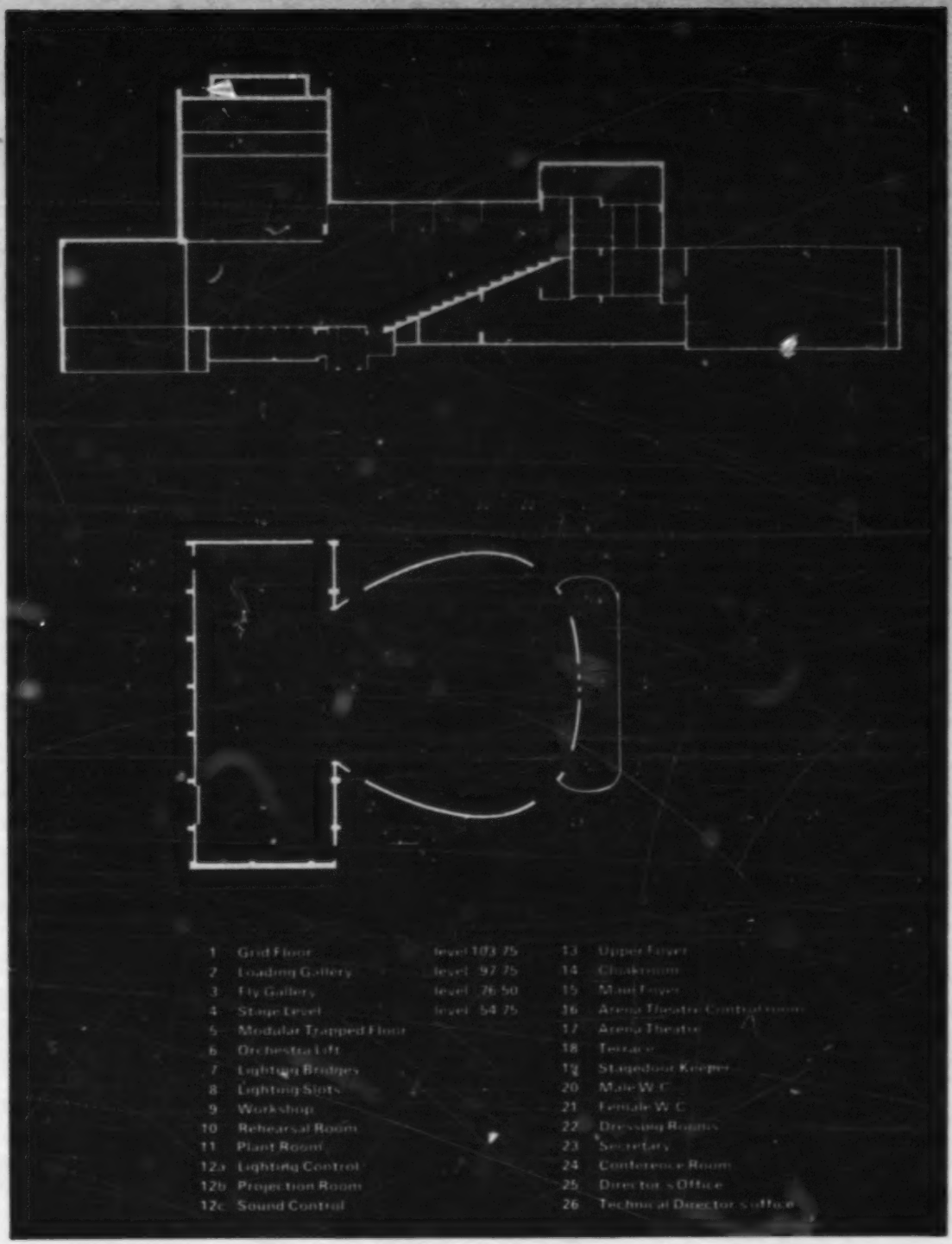
Universities have come to depend on charitable trust donations for much of their development and the Sherman Theatre was made possible by a generous gift from the Sherman Trust, supplemented by further grants from both the University and Government funds. The original intention of the Working Party in 1968 was to build a drama, music and film centre that could also be available for conferences, exhibitions and festivals. It was not intended to be a private place for the privileged members of the University but to be a place for the public. This original intention has never been abandoned and the Sherman makes an invaluable contribution to the place of the University in the community of Cardiff. It provides a theatrical centre for professional theatre, for some of the amateur theatre in S.E. Wales, and occasionally a centre for international theatre events: last July it was the meeting place for professional Children's Theatre companies from all over the world.

To be able to fulfil the intentions of the Working Party set up in 1968 the building was designed with two totally different performing spaces joined by foyers and bars. The bigger space, the Main Theatre, has 472 seats in a large fan-shaped auditorium that is built on a raked floor. The stage is 38' 3" wide and 18' 4" high with a depth of 35' to the forestage, which can add a further 10' to the depth of the acting area or can be lowered electrically to provide an orchestra pit for musical performances. The stage is provided with a flying tower and a counterweighted flying system: the light and sound control together with a projection room are at the back of the auditorium and give a totally uninterrupted view of the stage. Behind the main stage there is a workshop and scenery store.

The other performance area, the Arena Theatre, is designed to be a flexible space for performance and has movable trolleys for seating a maximum of 200. It is possible to perform in-the-round or as a traverse theatre, or in the shape of an old Elizabethan thrust stage or on a totally flat floor with the audience dispersed as the performing company chooses. The control room is raised above the head level of the audience and the lighting is easily accessible from the catwalks in the roof.

The Diploma Course

There is a number of post-graduate theatre courses in the U.K. and they mostly adopt different approaches: the Sherman Theatre's is based on the fact that it is a public theatre and the students' experience of and involvement in the daily running of the two theatres is central to the course. It has a clear professional content and is deliberately arranged to bridge the gap between University under-graduate theatre and the theatre as a profession. During their under-graduate years many students develop an interest in the theatre and whould like to pursue it as a professional career. It is difficult, however, for them to determine whether they have the ability or the level of commitment for the career they have in mind.



Plans for The Sherman Theatre, University College, Cardiff.

During their year at the Sherman our students have the opportunity to explore their own potential in stage management, lighting, administration, sound, design, writing or theatre in education. The Sherman offers them the choice to try out their ideas, to see their own plays put into performance, to discover for themselves where their own aptitudes lie. The regular connection with professional actors and directors is especially important in giving reference points from which they can measure their own commitment to theatre as well as their own abilities.

The teaching of the course is under the guidance of the Organizing Tutor, and is carried out by a small nucleus of fixed staff and a large number of visitors. We take advantage of directors and companies visiting the Sherman and during the year the post-graduates will have classes with a very varied group of performers: some will stay in residence for two or three weeks, some will visit us occasionally during the year and some will work with a class on only one occasion. But the more organized teaching on the course is only one part of the full year's work and the development line adopted by each member of the course will be determined by himself in consultation with the Tutor. Everybody takes part in a base-line instruction in technical skills, (lighting, sound, stage management) voice and movement (primarily for personal development and understanding rather than for the sake of performance): but beyond that, each student's course will vary in emphasis. We hope by the end of the year to have given every one some moderate experience of a large number of areas and considerable experience of a small number of areas.

To be able to accommodate the interests of our students it is often necessary to go outside the Sherman: some people may direct plays or act as technicians for amateur groups in Cardiff and even outside the city. We also try to make sure that the post-graduates will take a play on tour away from the Sherman and gain the necessary experience of having to do a "get-in" and a "get-out" in a strange theatre, solve the technical problems and carry out the business and publicity for the play.

There is a more formal requirement for a dissertation and this will be an individual piece of research or enquiry into an approved area of drama or theatre. The last thing that is wanted is an unrelated piece of academic research: what is undertaken should be an examination of material relevant to the student's own major interest and ideally should be of some help in clarifying his own aims and intentions for the future. The dissertation does not have a specific length, nor does it have a specific form: it may be offered as an extended essay or as an original play together with accompanying material of the director's notes, designs and any other topic that may be relevant, the research areas, for instance. Someone primarily interested in design will submit models, drawings and accompanying explanatory notes. Original work in play form or design work is generally linked to a performance and is not left as a piece of "study theatre": often the dissertation is linked to a major performance and will include all the directorial information needed for the production as well as a copy of "the book" with lighting, sound, props and costume plots.

At the end of the course the dissertations are submitted to an external examiner who will interview each student, discussing with him his own work on the course and his dissertation. Successful completion of the course depends on a student satisfying the external examiner, the Tutor and the Director that he has fulfilled the requirements of the course.

The Arena Theatre is the post-graduates' working theatre, although it is in use for touring professional companies and some of the amateur companies based in Cardiff. During the year, mostly in the second and third terms, there are productions inspired, directed and stage managed by post-graduates within the title "Sherman Arena Company", composed of actors from the students themselves, University staff, people who live in or near Cardiff: they generally provide a company of experienced and talented performers well able to respond to the demands of enterprising new directors.

The students at the Sherman come from all over the world. Approximately half to two-thirds of each year's intake is from the U.K. and about half to one-third from overseas. Generally overseas students come to us after a first degree in Theatre Studies or Drama, but some have read English because in many Universities drama is included under the title English: in some places work in drama is still largely an extra- curricular activity, but whatever the first degree it is essential that anyone coming to the Sherman for a year's Diploma Course should have a reasonable level of experience in drama, a strong commitment to the practice of theatre and be prepared to work hard and long hours. The majority of our overseas students are sponsored by their parent government or University and have an expected career pattern back in their own country at the end of the year.

The course is open to any suitably experienced and motivated student, provided he or she is a graduate and has a fluent command of English,

A group of post-graduates at The Sherman: 7 nationalities gathered together.

We have recently begun a connection with the Cardiff University English Centre for Overseas Students and any candidate from overseas who would like to spend a year working at the Sherman on our Diploma Course but whose English needs improving beforehand, can follow a short or long course at CUECOS and be associated with the theatre while under language training. For some overseas students this could mean a two-year stay in Cardiff, the first studying language and the second studying and working at the Sherman Theatre.

M.A. Course

In 1977 the English Department of University College opened a new one year M.A. course in Modern Theatre. In common with other one year Master's courses in the U.K. this is by dissertation and examination and consists of the study of a number of representative works from a selection of dramatists, including Wilde, O'Neill, Synge, Shaw Beckett, Pinter and Stoppard. It also involves students in the work of the Sherman Theatre by requiring them to follow the technical training part of the Diploma course and they are encouraged to do practical projects related to their studies, using the facilties available to them at the Sherman Theatre. This may include directing a production and an M.A. student who has the skill to carry out this may offer his production as a substitute for two of the required essays for the course.

Application

Applications for either of the two courses should be made to the appropriate place:

Diploma students:	The Organizing Tutor Sherman Theatre, University College, Cardiff
M.A. students:	The Secretary, Department of English, University College, Cardiff

*AUCC to administer CIDA programs

The Association of Universities and Colleges of Canada (AUCC) has contracted to act as the Ontario-Quebec regional coordinator of the Canadian International Development Agency's (CIDA) bilateral training program, effective October 1, 1977.

Through this program, individuals required for development projects in third world countries are chosen by their own government for specialist upgrading training in a Canadian university, community college or grade 13 class. The development projects are those in which Canada is involved. The specific training program and the financial and administrative terms are established in a bilateral agreement between the Canadian government and the third world government.

The AUCC, as regional coordinator, is administering the program only for institutions with fewer than 20 trainees. Participating universities are Waterloo, Western, Windsor Brock, Guelph, York, Ryerson, Carleton, Queen's, McGill and Concordia.

Institutions with more than 20 trainees contract directly with CIDA to administer the program. Within the Ontario-Quebec region, only the University of Ottawa, University of Toronto, Université de Montreal and Université du Québec have more than 20 trainees.

The AUCC contract currently involves 185 trainees from 39 countries, but is projected to grow to about 350 students with the inclusion of practical training programs.

(*Extracts from "University Affairs" November 1977 (pub. AUCC)*)

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*Inauguration of the University of Juba

(A Report by **John Theakstone,** I.U.C.)

On 3 October 1977 President Nimeiry formally inaugurated a new University in the Sudan. The University of Juba is likely to prove an interesting venture in higher education in Africa's largest country. It is the first centre of post-secondary education in the Southern Region of the Sudan, which covers about one quarter of the country.

The University of Juba was established by an Act in November 1975. It is to be a national institution but, as the Act makes clear, its prime purpose will be to serve the development needs of the Southern Region. According to the Act, the University of Juba will have four functions:

(a) to study and search for the natural resources with the object of promoting and developing the same, and to prepare qualified cadres in the sciences pertaining to such resources for the purpose of promoting the rural environments in the Southern Region and such similar regions all over the country;

(b) to prepare assisting cadres of technicians and advisers and open doors to such rural citizens who obtain reasonable qualifications so as to improve the performance of such citizens, and blend experience with knowledge;

(c) to undertake such sociological studies as may be necessary for environmental promotion and to graduate qualified cadres in the sciences of economics, public administration, business administration and community development;

(d) to inculcate the aims of national unity and diversified cultures through sociological studies and any other means.

To these ends, the University was established with a College of Natural Resources and Environmental Studies and a College of Social and Economic Studies. Subsequently, the Council of the University has also approved a College of Education and a College of Adult Education and Training. More recently it has been decided to establish a College of Engineering and a College of Medicine.

As the Act makes clear, the University is to concern itself with the problems of production of middle-level manpower in addition to graduating persons with degrees, and there will be a heavily rural bias in its orientation. The University will enjoy close links with both regional and national development agencies.

Dr. el Sammani A. Yagoub, a physicist and former Secretary-General of the National Council for Research, was appointed Vice Chancellor in August 1976. In a pamphlet outlining the background, concepts and plan of action for the University, Dr. Sammani emphasised the strong justification of the specific conceptualisation of the aims and methods of this unique University. As he said, no new University can afford to isolate itself

Inauguration of the University of Juba.

from contributing to the burning issues of satisfying the basic needs and rights of human beings to develop socially and economically. Tragically, Dr. Sammani was killed in an air crash on 28 April 1978.

The University drew up a tentative plan of action in December 1976 to cover the period 1976/77 — 1982/83. This period coincides with that of the new national Six Year Plan. Under the Government's six year plan for higher education, the University will receive S£5 million (about £8¼ million sterling) for the execution of the first phase of its development.

The University will have two main campuses. Initially it is operating on the site of the Juba Girls Secondary School at Atla'a Barra on the western boundary of the town, which is the seat of the Regional Government. This site never was used for its original purpose because of the civil war in the Sudan which ended with the Addis Ababa Agreement of 1972. However, a number of school buildings were erected, and these have been renovated. Together with a quite limited development of new buildings, these will constitute the University until the second site is developed at Bilinyang. This is an open rural area on the other side of the Bahr el Jebel (the White Nile) about 10-15 kilometres from the town by road. There, the University has been allocated an area of about 25 square kilometres for the development of a major campus and University farm. In addition to these two campuses, there are plans to establish eight sub-campuses within the Southern Region: students will be attached to these rural centres as part of their courses to enable them to undertake studies of a really practical nature.

The Government hopes to attract outside capital support to help in the development of the University. Discussions were held with the Commission of the European Communities in April 1976 with a view to the possible funding by the European Development Fund of a programming study of the University as a preliminary to possible capital support by EDF. In January 1977 the contract to undertake the programming study was awarded to the Inter-University Council for Higher Education Overseas. I.U.C. undertook to carry out the study in association with its Dutch and West German counterparts, NUFFIC and DAAD. The I.U.C. team, a mixture of staff members of universities in U.K., the Netherlands and West Germany, under the leadership of Professor John Turner of the University of Manchester, submitted its report to the Sudan Government in August

1977. The study was a wide-ranging one, covering the justification of the University, its structure and organization, curricula, physical development, and the overall financing of the University.

Dr. Robin Mills, a staff member of the Department of Geography at the University of Durham, has been working in Juba for some years as ILO manpower consultant. His studies indicate clearly the very great need for qualified persons at all levels in the Southern Region. The need for technicians and sub-professionals is as great as that for higher level manpower. It is likely that the University of Juba will cater for this need by offering suitable diploma courses. Indeed, it is possible that all students will have to register for a diploma in the first instance, access to a degree course being governed by the demand for graduates, performance in the diploma course and work experience after obtaining the diploma.

The University admitted its first students in September 1977: about 120 (roughly half from the Southern Region) including 30 mature students. 200 freshmen are expected to be admitted in September 1978 through the national system, together with 50 local mature students. The nucleus of staff has been recruited, including 5 from the U.K. However, the University still is in need of experienced teachers. The unique situation of the University of Juba offers an opportunity for interested persons to become involved from the beginning in an exciting approach to higher education in the developing world.